Better Division of Housework

What is the cause and effect of the domestic division of unpaid labor? Evidence
From Taiwanese Family

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I. Introduction

The division of housework has been an important topic, particularly nowadays when there are more and more double-income families. Many people used to view the unevenness as unfair and ascribe the uneven division of housework to gender stereotype, which jumps to conclusion that males should have spend more time on housework under any circumstances. However, it may be unreasonable or inefficient to share the housework equally sometimes; for instance, if a husband has to work overtime and gets home after 10 o'clock every day while his spouse only has a part-time job, then the uneven division should turn out to be the fair division. Therefore, to improve the division without divorcing from real life, it is necessary to develop a deep insight into what is the underlying causes of the division of housework and what consequences it brings right now.

There have been many kinds of researches on the division of housework and thus many mature theories have existed so far, therefore this study does not aim to propose another theory but to test how the existing culture-related theories can be applied to Taiwanese families. In terms of the causes, there are three main approaches explaining the division of housework (detailed later in Section II), and hence this study considers the following three null hypotheses according to each theory: (H1) Women who agree with traditional gender role would not spend more time on housework, and men who agree with it would not spend less time on housework, (H2) People whose monthly incomes are higher than their spouses would not spend less time on housework, and (H3) People whose weekly working time are longer than their spouses would not spend less time on housework. As for the consequences, traditional literature concentrates on marital satisfaction and psychological healthiness. Unfortunately, the datasets this study explores lack both of these indices, and family satisfaction and life quality become the target instead. There are two related hypotheses for these two indices: (H4) People who spend more time on housework than their spouses would not decrease their family satisfaction, and (H5) People who spend more time on housework than their spouses would not decrease their life qualities.

In this study, I use the data from the Panel Study of Family Dynamics, which is consisted of Taiwanese families, to test the hypotheses. I find that there is strong evidence for rejecting (H3) but weak evidence for rejecting (H1) and (H2); moreover, (H1) and (H2) are valuable for explaining the change in the husband's contribution to housework to some extent. In addition, I find (H4) and (H5) can be rejected but the effect is too trivial to feel in real life, and the difference between the husband's feeling and the wife's feeling are negligible. It is concluded that time is the most crucial determinant of the division of housework in Taiwan, and men are the ones who lead to the final division of housework. Besides, it is still better to split the housework equally when the husband and the wife share similar conditions from the perspective of both fairness and mental satisfaction.

II. Literature Review

There are three main approaches explaining the division of housework in literature according to Isabella (2002), which are the feminist theory, the theory of relative resources, and the theory of time availability. In short, the feminist theory claims that social gender roles make housework be perceived to be a women's task; the theory of relative resources claims that the individual with more resources (income, education, etc.) has more power to negotiate the division of housework, and men usually spend less time on housework for the reason that they usually have more resources; and the theory of time availability claims that the individual with less available time (maybe due to the work) cannot help but do less housework, and men are usually busier on work which explains the uneven division of housework.

The impact of division of household labor may be highly affected by gender. According to Jennifer et al. (2022), "Unpaid labor is associated with poorer mental health in women, but the effects are less apparent for men". A possible justification is that men are expected to do less housework, so when they are willing to contribute more, they would receive additional praise, while women would be blamed when they spend less time on housework than the norm. Furthermore, according to Dillaway and Broman (2001), "Women appear to have lower (marital) satisfaction than men, regardless of the division of household labor", which seems to be an inconsistent conclusion with the former essay.

III. Data and Sample

A. Data

The dataset for this study is obtained by combining data from the Panel Study of Family Dynamics, which is a fixed-sample tracking survey from 1999 to 2020

focusing on Taiwanese households. The survey is mainly conducted by either face-to-face questionnaires or online questionnaires every year before 2012 and every two years after 2012. It covers a variety of topics, including living and working conditions, living arrangements, attitudes toward life, children's fertility, and upbringing. Each variable in the dataset corresponds to one question in the survey, and there are over 900 variables in the dataset with at least 3,000 participants each year. The unit of observation is the person.

The inescapable concern in any questionnaire is that different participants' answers may be incomparable due to the different interpretations of the survey questions. For instance, the survey always includes two questions related to household chores, which are the most important variables in this study: (i) Last year, how many hours per week do you spend on housework? and (ii) Last year, how many hours per week does your spouse spend on housework? When answering these two questions, some people say they spend 168 hours, while most people reply with a number under 10. Nevertheless, this concern would be substantially reduced if we only care about the difference between these two questions, since the participants should answer these two questions with the same criteria.

B. Sample and Descriptive Statistics

The sample in this study only includes the observations who are married in the survey year, because only the family with at least two people would consider the division of housework; additionally, only the observations after 2008 are included in the sample for the completeness of the dataset. Table 1 shows there are over 2,000 participants in each survey year, which should be large enough for a persuasive analysis. Moreover, the numbers of males and females are very close, which is helpful to avoid sampling bias.

The variable of my main interest is *dchore*, which is the difference between the time the participants and their spouses spent on housework per week. Figure 1 exhibits the distribution of *dchore* by participants' genders, which indicates that wives usually spent more time on housework than their spouses, though many participants answer there are no differences. Please refer to Appendix A for the distribution of the time the participants and their spouses spent on housework.

The five variables which are helpful to evaluate the participant's attitudes toward gender roles arise from five scoring questions that only appear in the survey in 2022. For example, "Do you agree or disagree? The husband's responsibility is to earn money to support the family, and the wife is to take care of the family." There are five options to choose from in each question, from 1 (strongly disagree) to 5 (strongly agree), but I transform them into yes-no questions for the convenience of analysis. In particular, 1 and 2 would be converted into 0 which means "No" while 4 and 5 would be converted into 1 which means "Yes". The observations with the

answer "neither agree nor disagree" would be excluded from the analysis when testing the hypothesis of feminist theory, since they do not have a strong tendency in these assertions. Table 2 shows the distribution of these five answers.

The variables related to the monthly incomes and weekly working hours are essential when testing the hypotheses about the theory of relative resources and time availability, therefore the summary statistics about these variables are shown in Table 3. Since the summary statistics of these variables are highly dependent on the participant's sex, the table particularly shows this information. Moreover, the value of 0 has special meaning for both monthly incomes and weekly working hours, and therefore the amount of 0 is shown in the last column.

The variables representing the following two scoring questions are used for estimating the impact of the uneven division of household chores: (1) Are you satisfied with your family life? (2) How was life in the past year, good or bad? The distributions of their answers are shown in Panels (A) and (B) in Table 4. The first variable, *fam_sat* (family satisfaction), is the substitute for marital satisfaction with only four options to choose from, and the answers mainly concentrate on "strongly agree" and "agree", which may be hard to qualify the change. The second variable, *lif_qua* (life quality), is the substitute for mental healthiness with seven options to choose from. Though the larger variance in *lif_qua* is beneficial for catching the change, its meaning is far away from mental healthiness.

Summary statistics of the other variables are shown in Appendix B and C. It should be noted that answers to the questions asking about the participant's spouse have many missing values, such as age and the highest education level, therefore the model specifications including these variables may suffer from small sample size problems.

IV. Empirical Method

There are three regression models in this study. The first model is purely working for testing the hypothesis of the feminist theory. Since the five key variables only appear in the 2022 survey, which has been described in Section II Part B, it adopts an OLS structure as follows:

(1) $\quad y_i = x_i \beta_1 + \epsilon_i$

where the dependent variable y_i refers to *dchore*, the difference between the time the participants and their spouses spent on the household chore; the explanatory variable x_i involves three kinds of variables: (i) five dummy variables about the attitude towards social gender roles, which are *Q1, Q2, Q3, Q4,* and *Q5,* (ii) the interaction term of *sex* and the five dummies, (iii) control variables which have been described in Section II Part B, including *sex, dinc, dincsq, dwh, dwhsq, kid,*

4

kidsq, age, agesq, dage, dagesq, educ, and *educ2*; ϵ_i refers to the error term whose conditional mean is assumed to be zero.

The second model, which is working for testing the hypotheses in another two theories, runs on the data from 2008 to 2020, and thus it adopts the correlated random effect model for controlling the unobserved individual heterogeneity. The structure follows Chamberlain (1984) as follows:

(2) $y_{it} = x_{it}\beta_1 + g_t\beta_2 + z_i\beta_3 + c_i + u_{it}$

$\quad c_i = \phi + \bar{x}_i\beta_4 + a_i$

where the dependent variable y_i refers to *dchore*; the time-constant observed variable z_i refers to *sex*; the time variable g_t refers to a vector of aggregate time effects, which is the year dummies; the time-varying observed variables x_{it} involves: (i) target variables such as *dwh* and *dinc*, (ii) the interaction term of *sex* and the main interesting variables, (iii) control variables which are almost the same as the first model; $\bar{x}_i$ is the vector of time averages of x_{it}, such as *dincbar* and *dwhbar*; c_i is the unobserved individual heterogeneity, which is assumed to be correlated with $\bar{x}_i$; and u_{it} is the idiosyncratic error, which is assumed to be satisfied with the strict exogeneity assumption.

The third model is a correlated-random-effects ordered probit model for dealing with the ordered response obtained from the scoring questions. The model could be interpreted as a latent variable model as follows:

(3) $y_{it}^* = x_{it}\beta_1 + g_t\beta_2 + z_i\beta_3 + c_i + u_{it}$
$\quad c_i = \phi + \bar{x}_i\beta_4 + a_i$

$\quad y_{it} = 0 \quad \text{if } y_{it}^* \le \alpha_1$
$\quad y_{it} = J - 1 \text{ if } \alpha_{J-1} < y_{it}^* \le \alpha_J$
$\quad y_{it} = J \quad \text{if } y_{it}^* > \alpha_J$

where the first two equations are the same as the model (2), except that y_{it}^* is the unobservable variable, such as family satisfaction and life quality; the last three equations are the assumptions that help us transform the meaningful but transparent y_{it}^* into the observable y_{it}, which must be the ordered response, such as *fam_sat* or *lif_qua*, and each α is a cut point for transformation. With this latent model, we can obtain the response probabilities easily. For instance, $P(y = 2|x) = \Phi(\alpha_3 - x\beta) - \Phi(\alpha_2 - x\beta)$.

The key variables of interest vary by different models. In model (1), we are interested in whether the five dummies which represent different opinions on social gender roles have an impact on the time the participants and their spouses spent on

housework, and whether the impact would be dependent on *sex*. In model (2), we are interested in the coefficient of *dinc*, *dwh*, and their interaction term with *sex* since they are the direct evidence that less available time or more relative resources would change the behaviors of doing housework and these two factors would be affected by gender. In model (3), it is inappropriate to interpret the estimated coefficients in the structure of the order probit model, therefore computing the marginal effect afterward is necessary for the meaningful interpretation. The main task of this model is to investigate whether the uneven division of housework causes negative family satisfaction and life quality and whether the effect is different for males and females.

V. Results

A. Test the feminist theory

We start our analyses by testing the hypothesis (H1) Agreeing with traditional gender roles would not spend more time on housework for females and spend less time on housework for males. According to model (1) in Section III, we use *dchore* as the dependent variable and five dummy variables, *Q1* to *Q5*, as the explanatory variables. Table 5 shows the result. It should be noted that "Sex" indicates whether the specification includes *sex* and the interaction terms of the interested variables and *sex*, "Control" indicates whether the specification has control variables described in Section II Part B, and "Spouse" indicates whether the specification includes the control variables related to the participants' spouses, such as *dinc*, *dwh*, and *dage*.

In column (1), we only put *Q1* to *Q5* in the model specification. Two variables are statistically significant in the 0.1% level and one variable is statistically significant in the 5% level. In column (2), after we further include *sex* and the interaction terms of the five dummies and *sex*, there still exist two variables being statistically significant, though their p-values decrease a lot. The estimated coefficients of *Q5* and *Q5_sex* could be interpreted as following: when keeping everything else constant, if a woman agrees with the assertion of Q5 that the husband's responsibility is to earn money to support the family while the wife's responsibility is to take care of the family, then she would spend an extra 2.57 hours per week than her spouse. By contrast, if a man agrees with the same assertion, he would spend 6.29 hours less per week (2.57-8.86) than his spouse.

However, this interpretation may suffer from the omitted variables bias, therefore in column (3), the model specification adds some control variables. The estimated result is the sign of each estimated coefficient is entirely the same as that in column (2), though one more variable becomes statistically insignificant. Moreover, in

column (4), all the variables from Q1 to Q5 become statistically insignificant when the control variables about the spouse are considered in the model specification, which implies that whether females agree with the five assertions does not necessarily change the division of housework.

In summary, whether women agree with the traditional gender roles does not matter a lot, since all the estimated coefficient of the five dummies becomes statistically insignificant when all the control variables are added to the model. Conversely, whether men agree with the traditional gender roles is the underlying factor that determines the division of the housework because two of the interaction terms of *sex* and interested dummies always being statistically significant in all the specifications. A possible explanation is that both women and men are affected by gender roles but the effect for men is much larger, and thus the effect for women may be offset by that for men. After all, the computation of *dchore* is comparing the effort on housework for the husband and the wife. Besides, the finding is economically significant since eight or six hours less per week means nearly an hour less per day, which is a large difference.

Table 6 shows the result of the F-test of the model (1). The null hypotheses are either *Q1 = Q2 = Q3 = Q4 = Q5 = 0* or *Q1_sex = Q2_ sex = Q3_ sex = Q4_ sex = Q5_ sex = 0.* In terms of the former, though we can reject this null hypothesis at the 1% significant level, the p-value increases a lot. As for the latter, we can reject the null hypotheses at the 0.1% significant level more confidently.

B. Test the theory of relative resources and time availability

In this part, we aim to explore the hypothesis about relative resources and time availability, and it is feasible to work with the correlated random effect model since the survey involves questions about monthly earnings and weekly working hours in each year. The model assumes there exists some relation between the individual heterogeneity and the time-varying explanatory variables, therefore each model specification includes time averages of the time-varying explanatory variables.

Table 7 shows the result of the theory of relative resources. In column (1), only *dinc*, its square *dincsq*, its time average *dincbar*, and time fixed effect are included the model specification. It indicates that when an individual could earn NT$10,000 more per month than his or her spouse, then he or she would averagely spend 0.0336 hours less a week on housework than his or her spouse. In addition, due to the negative sign of *dincsq*, the impact of relative resources on the division of housework could be larger when the difference in the income between spouses increases, though this non-linear effect is trivial. Both *dinc* and *dincsq* are statistically significant at the 1% level. In column (2), we add *sex* and the intersection terms of *dinc* and *sex* into the model specification. In column (3), we include the control variable, such as *kid, kidsq, kidbar, age, agesq, educ, wh, whsq,*

wh_sex, and *whbar,* to mitigate the potential selection bias. In column (4), we further include the variables related to the participants' spouses, such as *dage, dagesq, dwh, dwhsq, dwh_sex,* and *dwhbar*, to ensure the robustness of the regression result. In column (5), the model specification is the same as column (4) except that the time average variables are excluded since the statistically insignificant *dincbar* in column (4) shows that the assumption of correlated random effect is violated and the random effect model should be a better one.

The results of these four columns are slightly different, but *dinc_sex* should be statistically significant and *dinc* should not. The interpretation of column (5) is that a woman would spend 0.0158 hours more a week on housework than her spouse even when she can earn NT$10,000 more per month than her spouse, but the effect is not statistically significant. By contrast, despite the uncertain 0.0158 hours, a male would be very likely to spend at least 0.0289 hours less per week in the same situation. A similar result comes from Cheung et al. (2022), who find "the birth of children with disabilities causes employment and earnings of mother to decline by 9% and 16%, respectively, but the negative impacts on fathers' labor supply are small in magnitude and statistically insignificant. Besides, the above results still hold even when the mother is the major earner in the household". These results may imply that relative recourse would have an impact on the division of housework, but the power of negotiation only belongs to males. The magnitude of the estimated coefficient is very small. To make the calculation easier, assume that *dinc* has no impact on the division of housework for women. Imagine that in a household where the husband could earn NT$ 100,000 each month (higher than 95% of the people in the dataset), while the wife could earn NT$ 30,000 each month (slightly higher than the legal minimum wage), the husband would spend 0.2 hours less per week than his wife, which is almost imperceptible in the real life. In summary, though the null hypothesis (H2) can be rejected, it is hard to explain the division of housework solely by the theory of relative resources.

Table 8 shows the result of the theory of time availability. As a result of the same structure, we can apply the same interpretation as above. The result in column (1) reveals that when an individual spends one more hour per week on work than his or her spouse, then he or she spends 0.164 hours less per week on housework. The result in column (2) points out that with one more hour per week on work than their spouse, women spend 0.187 hours less per week on housework, whereas men spend 0.125 hours less per week on housework. Both *dwh* and *dwh_sex* are statistically significant at 0.1% level, and hence it is confident to reject the null hypothesis (H3). However, it is unexpected that the effect is larger for females than for males. In column (3) and (4), more control variables are included in the model specifications but the estimated coefficients keep almost the same, which suggests the result is robust enough. Since *dwhsq* is statistically insignificant, the time availability effect is linear. Note that *dwhbar* is always statistically significant at 0.1% level, which

indicates that the explanatory variables really correlate with the individual effect and the estimated result is closer to the fixed effect model.

The magnitude of the estimated coefficient is noticeable. Imagine that in a household where the wife work from 7 am to 7 pm every weekday and the husband work from 9 am to 5 pm every weekday, the wife would spend 20 hours more per week ($(12 - 8) \times 5 = 20$) than her spouse, so she would spend 3.52 hours less per week ($20 \times 0.176 = 3.52$) than her spouse on average, which is nearly 30 minutes per day.

C. Examine the effect of the division of housework

In this part, we examine the effect of the division of housework on family satisfaction and life quality by the ordered probit models with random effects and correlated random effects. Table 9 shows the estimated results of the ordered probit models. Columns (1) and (2) are respectively the random effect model and correlated random effect model with *fam_sat* being the dependent variable, and columns (3) and (4) are the same two models with *lif_qua* being the dependent variable. It is indicated that spending more time than spouses on housework has negative impacts on both family satisfaction and life quality, and only the impact on life quality depends on gender. Both effects are statistically significant in the two models, and the random effect model should be a more reliable one due to the statistical insignificance of *dchorebar*. However, the estimated coefficient in ordered probit models cannot be interpreted directly, and therefore the average partial effects (APEs) of these models are presented in Table 10. It suggests when spending one more hour per week on housework than spouses, the predicted probability of strongly agreeing with being satisfied with the family life would decrease by 0.085% while that of strongly disagreeing with being satisfied with the family life would increase by 0.007%. Also, when spending one more hour per week on housework than spouses, the predicted probability of having the best life quality would decrease by 0.034% while that of having the worst life quality would increase by 0.007%. Though nearly all these estimated coefficients are statistically significant, their magnitudes are too trivial to have a clear understanding of the change caused by the housework loading.

To investigate the impact more concretely, Table 11 and Table 12 compute APEs in a specific situation, in which there is a married individual whose age is 41 years old with two kids and a college degree and he or she does not earn more or spend more time on housework than his or her spouse. According to Table 11, when the individual is a man and facing the question of family satisfaction, his predicted probability of "strongly disagree", "disagree", "agree", and "strongly agree" are respectively 0.8%, 4.8%, 58.4%, and 36.1%. Suppose that he spends 5 more hours per week than his spouse, then the predicted probability would become 0.9%, 4.9%,

9

58.7%, and 35.6%, which is almost the same. Furthermore, when the individual is a woman and facing the question of family satisfaction, her predicted probability of "strongly disagree", "disagree", "agree", and "strongly agree" are respectively 1.1%, 6.0%, 60.9%, and 32.0%. Suppose that she spends 5 more hours per week than her spouse, then the predicted probability would become 1.2%, 6.1%, 61.1%, and 31.6%, which is also almost the same. According to Table 12, when the individual is a man and facing the question of life quality, his predicted probability of being "negative" (1~3), "neutral" (4), and "positive" (5~7) are respectively 11.1%, 18.5%, and 70.5%. Suppose that he spends 5 more hours per week than his spouse, then the predicted probability would become 11.2%, 18.6%, and 70.2%, which is almost the same. When the individual is a woman and facing the question of life quality, her predicted probability of being "negative", "neutral", and "positive" are respectively 8.8%, 16.4%, and 74.9%. Suppose that she spends 5 more hours per week than her spouse, then the predicted probability of being "negative", "neutral", and "positive" would become 8.9%, 16.5%, and 74.6%, which is also almost the same.

In summary, the effect of the division of housework on family satisfaction and life quality is almost always statistically significant, but the magnitude is also always neglectable. Therefore, it is more proper to conclude that there exist very small negative impacts on both men and women and the impact does depend on gender but is also neglectable.

VI. Discussion and Conclusion

In this paper, we exploit all the Taiwanese Families from the Panel Study of Family Dynamics to analyze the cause and consequence of the existing uneven division of housework. In terms of the cause, we find that all three theories could explain part of the uneven division, but most of the result depends on gender. Specifically, the attitude towards gender roles indeed plays a crucial role, but which concept the husband agrees with has a larger impact than which concept the wife agrees with. Furthermore, the change of the relative recourse, which is measured by income in this study, would affect the division of the housework, but the power of negotiation only belongs to men; by contrast, the individual with more working hours does spend less time on housework, but the effect is larger for males. From the perspective of statistical significance, the largest one is the theory of time availability and the smallest one is the feminist theory. Concerning the economic significance, the largest one is the feminist theory and the smallest one is the theory of relative resources. In terms of the consequence, we find that the uneven division of housework has a negative but negligible influence on both family satisfaction and life quality. The influence on family satisfaction is indifferent to men and

women, while the influence on life quality is only slightly different. The estimated average partial effect is statistically significant but economically insignificant.

According to these findings, the first lesson is that we have to realize time constraint is the truly crucial factor that determines the division of housework, so it is unreasonable to ascribe all the unevenness to gender roles. On top of that, the traditional gender role is far more important than the relative resources, which refutes the common concept that husbands should have the privilege to do less housework since they have already made a huge economic contribution to the family. Simultaneously, both males and females would be negatively influenced by the excessive housework when it comes to family satisfaction and life quality, and the difference between the influence on males and females is ignorable; hence despite the fairness, it is still better to split the housework equally when the husband and the wife share the similar conditions.

There are three important limitations in this study which are mainly due to the properties of the data. First, the dataset in the study is collected by the questionnaire, which is easily affected by the participants' subjective cognitions. For instance, when answering the question "Do you agree that the best way for a woman to be independent is to have a job?", the answer "strongly agree" to some people may be equal to "agree" to other people, not to mention that it is hard to testify these answers. Second, the survey only considers the time spent on housework, instead of what housework the husband and the wife do. For example, doing the dishes for twenty minutes usually consumes more energy than taking out the trash for twenty minutes. Third, there still exist many different ways to test the cause and consequence of the division of housework. For example, I only measure the relative resource by the difference in income, but education, type of work, and reputation are also common factors that would be viewed as some resources in the literature. All of these limitations are important issues for future research, and of course, better data is needed to sort them out.

VII. References

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Table

gender	survey year 2008	2009	2010	2011	2012	2014	2016	2018	2020	Total
female	1,062	1,018	1,343	716	1,363	1,378	1,408	1,634	1,532	11,454
male	1,105	1,072	1,298	1,161	1,390	1,434	1,491	1,691	1,664	12,306
Total	2,167	2,090	2,641	1,877	2,753	2,812	2,899	3,325	3,196	23,760

TABLE 1. SIZE OF MALES AND FEMALES EACH YEAR

variable	meaning	agree	disagree	total
Q1	The best way for a woman to be independent is to have a job.	2,434	309	2,743
Q2	If both spouses have jobs, they should share the household chores equally.	2,867	68	2,935
Q3	It is appropriate for men to be in charge of household chores, instead of working outside.	1,807	819	2,626
Q4	In a recession, female employees should be laid off first.	390	2,428	2,818
Q5	The husband's responsibility is to earn money to support the family, while the wife's responsibility is to take care of the family.	841	1,535	2,376

TABLE 2. FIVE QUESTIONS ABOUT ATTITUDE TOWARDS GENDER ROLES

Variable	Meaning	Sex	Obs	Mean	Std. Dev.	Min	Max	Amount of 0
wh	How many hours do you spend on work per week?	Male	11,958	38.64618	24.19524	0	168	2,385
wh2	How many hours does your spouse spend on work per week?	Male	11,958	24.2344	24.26425	0	168	5,371
dwh	The difference between wh and wh2	Male	11,958	14.41177	28.671	-168	168	3,941
inc	What is your monthly income?	Male	11,958	5.364676	11.75463	0	300	2,533
inc2	What is your spouse's monthly income?	Male	11,958	4.292705	15.23825	0	200	5,869
dinc	The difference between inc and inc2	Male	11,958	1.071971	17.42765	-200	300	2,489
wh	How many hours do you spend on work per week?	Female	10,938	26.11501	23.614	0	168	4,235
wh2	How many hours does your spouse spend on work per week?	Female	10,938	32.16612	25.79948	0	168	3,527
dwh	The difference between wh and wh2	Female	10,938	-6.051106	28.68276	-168	168	4,058
inc	What is your monthly income?	Female	10,938	2.859889	8.535658	0	200	4,514
inc2	What is your spouse's monthly income?	Female	10,938	7.201109	18.83063	0	450	3,637
dinc	The difference between inc and inc2	Female	10,938	-4.34122	18.13527	-258	105.5	2,873

TABLE 3. THE SUMMARY STATISTICS ABOUT WEEKLY WORKING HOURS AND MONTHLY INCOME

Are you satisfied with your family life?	sex female	male	Total	How was life in the past year, good or bad?	sex female	male	Total
strongly disagree 1	139	127	266	very bad 1	193	252	445
				2	280	295	575
disagree 2	802	650	1,452	3	698	946	1,644
				4	2,346	2,682	5,028
agree 3	7,644	7,680	15,324	5	3,701	4,179	7,880
				6	2,697	2,562	5,259
strongly agree 4	2,852	3,837	6,689	very good 7	1,533	1,388	2,921
Total	11,437	12,294	23,731	Total	11,448	12,304	23,752

(A)   (B)

TABLE 4. DISTRIBUTION OF FAMILY SATISFACTION AND LIFE QUALITY

	(1)		(2)		(3)		(4)	
	dchore		dchore		dchore		dchore	
Q1	7.252***	(5.40)	1.701	(0.81)	2.355	(1.15)	1.782	(0.87)
Q2	0.896	(0.34)	-4.399	(-0.95)	-3.403	(-0.81)	-2.728	(-0.63)
Q3	-1.964*	(-2.19)	-2.294*	(-2.26)	-2.272*	(-2.27)	-1.969	(-1.94)
Q4	2.238	(1.41)	2.966	(1.50)	3.177	(1.63)	3.752	(1.88)
Q5	-5.107***	(-5.03)	2.570*	(2.03)	1.470	(1.11)	0.987	(0.72)
Q1_sex			2.017	(0.80)	1.465	(0.59)	1.307	(0.53)
Q2_sex			1.834	(0.34)	0.344	(0.07)	0.234	(0.05)
Q3_sex			3.047*	(1.98)	3.259*	(2.15)	3.283*	(2.20)
Q4_sex			-4.253	(-1.56)	-5.061	(-1.91)	-6.365*	(-2.39)
Q5_sex			-8.860***	(-5.20)	-8.150***	(-4.67)	-6.175***	(-3.48)
Sex	no		yes		yes		yes	
Control	no		no		yes		yes	
Spouse	no		no		no		yes	
N	1608		1608		1608		1589	
r2	0.0386		0.278		0.316		0.350	

t statistics in parentheses

* p<0.05, **p<0.01, *** p<0.001

TABLE 5. ESTIMATED RESULT OF THE FEMINIST THEORY

	(1)	(2)	(3)	(4)	(2)	(3)	(4)
hypotheses	Q1-Q5	Q1-Q5	Q1-Q5	Q1-Q5	Q1_sex-Q5_sex	Q1_sex-Q5_sex	Q1_sex-Q5_sex
df	1602	1596	1584	1559	1596	1584	1559
F-statistic	10.67	5.10	3.22	2.83	11.04	9.68	8.24
p-value	0.0000	0.0001	0.0067	0.0151	0.0000	0.0000	0.0000

TABLE 6. F-TEST OF MODEL (1)

	(1)	(2)	(3)	(4)	(5)
	dchore	dchore	dchore	dchore	dchore
dinc	-0.0336***	-0.0132	0.0104	0.0201*	0.0158
	(-3.71)	(-1.28)	(1.08)	(2.08)	(1.68)
dincsq	-0.000324***	-0.000176*	-0.0000537	0.000000193	-0.00000270
	(-3.35)	(-2.34)	(-0.89)	(0.00)	(-0.05)
dincbar	-0.280***	-0.108***	-0.0891***	-0.0175	
	(-13.40)	(-6.72)	(-5.71)	(-1.18)	
sex		-19.07***	-23.37***	-22.18***	-23.11***
		(-55.65)	(-39.52)	(-29.01)	(-30.64)
dinc_sex		-0.0219	-0.0407***	-0.0300*	-0.0289*
		(-1.85)	(-3.49)	(-2.44)	(-2.34)
Sex	no	yes	yes	yes	yes
Control	no	no	yes	yes	yes
Spouse	no	no	no	yes	yes
Individual	CRE	CRE	CRE	CRE	RE
N	22375	22375	22373	18877	18877
N_g	5960	5960	5959	4170	4170
r2_w	0.00733	0.00734	0.0274	0.0525	0.0533
r2_o	0.0452	0.286	0.331	0.386	0.383
r2_b	0.0559	0.333	0.392	0.499	0.495

t statistics in parentheses

* p<0.05, **p<0.01, *** p<0.001

TABLE 7. ESTIMATED RESULT OF THEORY OF RELATIVE RESOURCES

	(1)	(2)	(3)	(4)
	dchore	dchore	dchore	dchore
dwh	-0.164***	-0.187***	-0.184***	-0.176***
	(-22.81)	(-20.58)	(-20.30)	(-18.26)
dwhsq	-0.0000123	-0.000230*	-0.000221	-0.000215
	(-0.11)	(-1.98)	(-1.90)	(-1.70)
dwhbar	-0.170***	-0.0509***	-0.0586***	-0.0684***
	(-17.89)	(-5.48)	(-5.88)	(-6.01)
sex		-16.26***	-16.82***	-15.24***
		(-48.28)	(-46.44)	(-33.21)
dwh_sex		0.0621***	0.0617***	0.0376**
		(5.63)	(5.70)	(3.07)
Sex	no	yes	yes	yes
Control	no	no	yes	yes
Spouse	no	no	no	yes
N	22375	22375	22373	18877
N_g	5960	5960	5959	4170
r2_w	0.0482	0.0485	0.0482	0.0499
r2_o	0.197	0.346	0.351	0.367
r2_b	0.239	0.410	0.418	0.473

t statistics in parentheses

* p<0.05, **p<0.01, *** p<0.001

TABLE 8. ESTIMATED RESULT OF THEORY OF TIME AVAILABILITY

	(1) RE fam_sat	(2) CRE fam_sat	(3) RE lif_qua	(4) CRE lif_qua
sex	-0.153**	-0.193**	-0.377***	-0.390***
	(-2.65)	(-3.00)	(-7.00)	(-6.63)
dchore	-0.00359***	-0.00300**	-0.00239**	-0.00221*
	(-3.68)	(-2.97)	(-2.81)	(-2.51)
dchore_sex	0.00134	0.00126	0.00363**	0.00357**
	-0.96	-0.91	-3.14	-3.09
dwh	-0.00117	-0.000379	-0.00032	0.000196
	(-1.38)	(-0.41)	(-0.44)	-0.25
dinc	0.00290***	0.00297***	0.0008	0.000598
	-3.42	-3.3	-1.05	-0.73
dchorebar		-0.00305		-0.00103
		(-1.79)		(-0.67)
N	22356	22356	22368	22368
N_g	5958	5958	5958	5958

TABLE 9. ESTIMATED RESULT OF FAMILY SATISFACTION AND LIFE QUALITY

			Delta-method				
			dy/dx	Std. Err.	z	P>z	[95% Conf.	Interval]
	dchore _predict							
Family Satisfication	RE	1	0.000074	0.000020	3.62	0.000	0.0000338	0.0001133
		2	0.000278	0.000076	3.66	0.000	0.0001292	0.0004269
		3	0.000504	0.000138	3.66	0.000	0.0002344	0.0007743
		4	-0.000856	0.000233	-3.68	0.000	-0.0013117	-0.0004003
	CRE	1	0.000061	0.000021	2.94	0.003	0.0000203	0.0001013
		2	0.000230	0.000078	2.95	0.003	0.0000776	0.0003833
		3	0.000424	0.000144	2.96	0.003	0.0001432	0.0007055
		4	-0.000716	0.000241	-2.97	0.003	-0.0011882	-0.0002429
	dchore _predict							
Life quality	RE	1	0.000078	0.000028	2.8	0.005	0.0000233	0.0001327
		2	0.000078	0.000028	2.79	0.005	0.0000231	0.0001325
		3	0.000172	0.000061	2.8	0.005	0.0000517	0.0002916
		4	0.000288	0.000102	2.81	0.005	0.0000872	0.0004882
		5	0.000011	0.000007	1.46	0.143	-0.0000037	0.0000255
		6	-0.000286	0.000102	-2.81	0.005	-0.0004861	-0.0000866
		7	-0.000340	0.000121	-2.81	0.005	-0.0005763	-0.0001030
	CRE	1	0.000072	0.000029	2.49	0.013	0.0000154	0.0001283
		2	0.000072	0.000029	2.49	0.013	0.0000153	0.0001284
		3	0.000159	0.000064	2.5	0.012	0.0000344	0.0002834
		4	0.000268	0.000107	2.51	0.012	0.0000584	0.0004766
		5	0.000012	0.000008	1.57	0.117	-0.0000030	0.0000267
		6	-0.000265	0.000106	-2.51	0.012	-0.0004729	-0.0000577
		7	-0.000317	0.000126	-2.51	0.012	-0.0005641	-0.0000692

TABLE 10. AVERAGE PARTIAL EFFECTS OF FAMILY SATISFACTION AND LIFE QUALITY

	Male				Female			
	RE		CRE		RE		CRE	
Base model: kid=2, age=41, dinc=0, dwh=0, educ=College								
E(y=1|x)	0.0083208***	(8.77)	0.0090429***	(8.62)	0.0114906***	(9.62)	0.0114168***	(9.71)
E(y=2|x)	0.0475874***	(17.51)	0.0498278***	(17.4)	0.0598185***	(20.26)	0.0596884***	(20.29)
E(y=3|x)	0.5835372***	(38.44)	0.5871059***	(38.26)	0.6085547***	(38.36)	0.6124432***	(38.9)
E(y=4|x)	0.3605546***	(23.38)	0.3540234***	(22.68)	0.3201362***	(20.61)	0.3164516***	(20.22)
Difference from the base model: marginal effect								
E(y=1|x)	0.0000558***	(3.57)	0.0000497**	(2.92)	0.0000745***	(3.57)	0.0000618**	(2.91)
E(y=2|x)	0.0002202***	(3.64)	0.0001885**	(2.94)	0.0002594***	(3.64)	0.0002166**	(2.94)
E(y=3|x)	0.0006234***	(3.61)	0.0005052**	(2.93)	0.0005128***	(3.61)	0.0004312**	(2.93)
E(y=4|x)	-0.0008994***	(-3.66)	-0.0007434**	(-2.95)	-0.0008466***	(-3.66)	-0.0007096**	(-2.96)

z statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

TABLE 11. AVERAGE PARTIAL EFFECTS ESTIMATIONS WITH BASE MODEL ON FAMILY SATISFACTION

	Male				Female			
	RE		CRE		RE		CRE	
Base model: kid=2, age=41, dinc=0, dwh=0, educ=College								
E(y=1|x)	0.0209677***	(10.33)	0.0216347***	(10.2)	0.0150358***	(9.51)	0.0148524***	(9.53)
E(y=2|x)	0.024249***	(14.73)	0.0247133***	(14.68)	0.0188429***	(13.4)	0.018648***	(13.42)
E(y=3|x)	0.0652953***	(25.2)	0.0660849***	(25.19)	0.053714***	(22.74)	0.0533251***	(22.78)
E(y=4|x)	0.1845534***	(40)	0.185463***	(39.41)	0.1639018***	(43.47)	0.1636939***	(42.52)
E(y=5|x)	0.2908288***	(28.97)	0.2907724***	(28.58)	0.2816481***	(29.65)	0.2832841***	(29.49)
E(y=6|x)	0.2183561***	(31.98)	0.2177451***	(32.37)	0.230086***	(27.2)	0.2320043***	(27.84)
E(y=7|x)	0.1957498***	(12.49)	0.1935866***	(12.24)	0.2367713***	(15.38)	0.2341922***	(15.07)
Difference from the base model: marginal effect								
E(y=1|x)	0.0000809**	(2.79)	0.0000768*	(2.49)	0.0000612**	(2.75)	0.0000562*	(2.46)
E(y=2|x)	0.0000705**	(2.79)	0.000066*	(2.49)	0.000059**	(2.78)	0.0000544*	(2.48)
E(y=3|x)	0.0001443**	(2.8)	0.0001341*	(2.49)	0.0001299**	(2.8)	0.0001204*	(2.5)
E(y=4|x)	0.0002292**	(2.76)	0.0002112*	(2.46)	0.0002345**	(2.77)	0.0002197*	(2.48)
E(y=5|x)	0.0000423*	(2.26)	0.0000374*	(2.08)	0.0000902*	(2.57)	0.0000874*	(2.35)
E(y=6|x)	-0.00018**	(-2.7)	-0.0001674*	(-2.41)	-0.000148**	(-2.69)	-0.0001392*	(-2.42)
E(y=7|x)	-0.0003872**	(-2.81)	-0.0003581*	(-2.5)	-0.0004267**	(-2.81)	-0.0003988*	(-2.51)

z statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

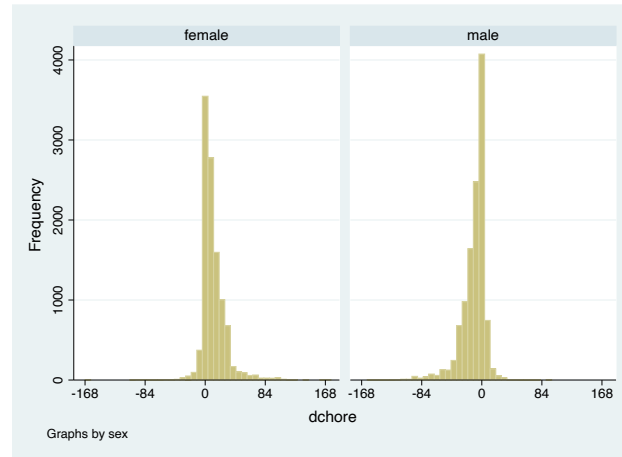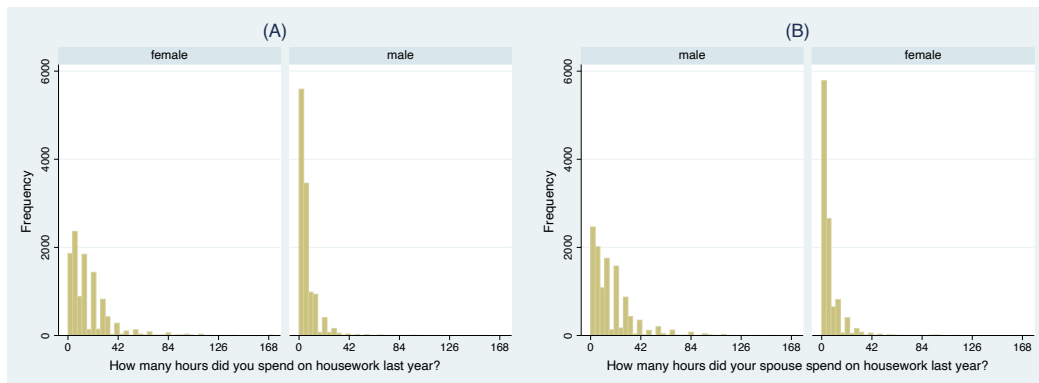TABLE 12. AVERAGE PARTIAL EFFECTS ESTIMATIONS WITH BASE MODEL ON LIFE QUALITY

Figure

FIGURE 1. DISTRIBUTION OF DCHORE BY GENDER

Appendix

Appendix A. Distribution of time spent on housework

Appendix B. Summary Statistics of Control Variables

Variable	Meaning	Obs	Mean	Std. Dev.	Min	Max
kid	Number of kids	22,894	1.917795	1.318552	0	10
age	Age of the participant	22,896	46.11046	14.4035	26	85
age2	Age of the participant's spouse	19,303	45.97275	14.4484	18	95
dage	Diff. between age and age2	19,303	-0.085013	4.844582	-30	24

Appendix C. Summary Statistics of Highest Education Level

educ	meaning	participant	spouse
1	illiterate and self-study	749	538
2	elementary and junior high	4,429	3,611
3	senior and vocational high	5,394	3,463
4	university and college	8,353	4,203
5	graduate	3,971	1,006
Total		22,896	12,821