Working Mothers and Sons' Preferences Regarding Female Labor Supply: Direct Evidence from Stated Preferences

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Abstract

We investigate the argument that men who are raised by working mothers develop a preference that is favorable toward working women, and, consequently, are more likely to have working wives. We test this hypothesis using the Japanese General Social Surveys 2000-2003. We directly examine the responses to the opinion survey's questions regarding appropriate gender roles. The estimation results indicate that men raised by full-time working mothers are less likely to support traditional gender roles. Those men are also less likely to believe in the negative impact of a mother's working on her children's development.

JEL Classification: J12, J16, J22

Key words: Female Labor Supply, Social Norm, Japan

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1   Introduction

The employment rate of young women in Japan has increased very rapidly over the last several years. For example, the labor force participation rate of women aged 25 to 29 increased from 56 percent in 1987 to 69 percent in 2002.[1] The increase in the employment rate is particularly notable among married women in this age group. For married women aged 25 to 29, the employment rate increased from 69 percent in 1987 to 76 percent in 2002. The rise in real wages for women largely explains this increase. The real wage rate rose by 23 percent during the period, while the wage semi-elasticity of employment probability is estimated to have been between 0.05 and 0.2 based on cross-sectional data for this group.[2] Thus, the real wage increase explains 4.6 of the percentage-point increase in the employment rate at most, leaving the remaining 2.4 percentage points unexplained. Mitani (2003) argues that a change in social norms regarding female labor force participation explains some of the gap. Specifically, the Cabinet Office's poll on gender equality in society reports a large decrease in the proportions of male and female respondents supporting the statement, "Husbands should work outside the home, and wives should keep the household" (Cabinet Office (2004)).

Similarly, Fernandez et al. (2004) examine the increase in the U.S. female employment rate in recent decades and argues that the change in men's attitudes toward female labor force participation induced by mothers' labor force participation is an important factor in explaining the recent, dramatic

increase in the female employment rate. They argue that men who were raised by working mothers view it as natural for women to work outside the home. To test their hypothesis, they examined whether a wife's employment status depends on the employment status of her husband's mother when the husband was 15 years old. Based on samples of married couples in the General Social Survey in 1988 and 1994, they found that husbands raised by working mothers were about 10 to 20 percentage points more likely to have working wives. Antecol (2001) and Fernandez, Fogli (2005) also have argued for the importance of "culture" or social norms in explaining female labor force participation. They have shown that U.S. women's decisions to participate in the labor force are affected by the labor force participation rate of the country of their or their ancestors' ethnic origin. Other researchers have attributed the unexplained increase in female labor force participation to the relative income concern (Neumark, Postlewaite (1998)) or the development of electronic appliances, which have relieved women from some household chores (Greenwood et al. (2005)).

Papers by Tanaka (2005) and Shirahase (2005) are the most closely related to our work using Japanese data. Tanaka (2005) examines the Japanese General Social Surveys to find that a mother's labor force participation positively affects her daughter's educational attainment, while depressing that of her son. He interprets this result as evidence that working mothers act as role models for daughters. Shirahase (2005) assesses the effect of mother's work status on individuals' opinions regarding the appropriate division of

labor using the Social Stratification and Social Mobility Surveys (SSM Surveys) and found that a mother's labor force participation affects neither her sons' nor her daughters' opinions regarding gender roles.

The purpose of this paper is to examine whether the work status of a husband's mother affects his wife's labor supply. Using the Japanese General Social Survey (JGSS hereafter), we examine whether the husbands who were raised by working mothers are more likely to have working wives. The JGSS directly asks respondents about their attitudes toward women's labor market and social participation. For example, the survey asks whether the respondent supports a statement that a married woman should not hold a job if her husband has sufficient earnings. Several questions like this are available in the JGSS, and we establish the relation between mother's work status and the responses to these questions.

This supplements the research by Fernandez et al. (2004) by directly examining the effect of mothers' labor supply on sons' preferences regarding women's labor force participation. We also attempt to replicate the results reported by Fernandez et al. (2004) using the JGSS data collected in 2000, 2001, 2002 and 2003. We find that men raised by full-time working mothers are more likely to have full-time working wives than the men raised by mothers who are not full-time employed, though the results are not statistically significant. However, directly examining the survey responses to the gender role questions in the survey, we find that men raised by full-time working mothers are more likely to respond negatively to traditional gender stereo-

types. Taken together, the evidence indicates that mothers' full-time work experience affects their sons' stated preferences toward female labor.

The rest of this paper is organized as follows. Section 2 briefly explains the theoretical backdrop of our analysis by introducing the model by Fernandez et al. (2004); section 3 describes the empirical model; section 4 explains the data; section 5 introduces the estimation results; section 6 discusses the relation between the stated preference and the action taken; and the last section concludes.

2 Mother's Employment Status and Son's Preference

The seminal work by Fernandez et al. (2004) introduces a dynamic model in which an increase of female labor force participation induces a further increase in the next generation. Specifically, each man and woman has a utility function over consumption, household production, and marriage-matching quality. In addition, a man raised by a non-working mother suffers from his wife's working because the wife's behavior contradicts his family's norms. In contrast, a man raised by a working mother feels comfortable with his wife's employment because he learns to feel that female employment is natural through his preference formation during adolescence.

Marriage produces a surplus for both the man and the woman because consumption and household production goods enter the utility function of each individual as public goods. Men and women have heterogeneous mar-

ket and household productivity. Men and women are randomly matched with their potential partners, and they decide whether to get married by comparing the indirect utility from being married and the indirect utility from being single. The quality of marriage matching is randomly drawn at the time of marriage, and this creates randomness in whether or not a particular couple gets married.

The increase in the number of men raised by working mothers increases the probability of marriage for women with high market productivity. This encourages women to acquire skills in market production. Through this dynamic mechanism, the increase in female labor force participation and the increase in the number of men raised by working mothers subsequently increases the female labor force participation rate in the next generation until the economy reaches a steady state.

In the following section, we test the empirical prediction of Fernandez et al. (2004), that is: Given being married, men raised by working mothers are more likely to have working wives. In addition, we directly test the validity of the model assumption by examining the effect of being raised by a working mother on men's stated preferences regarding traditional gender roles.

3   Empirical Model

We estimate the effect of a husband's mother's work status during the husband's adolescence on his wife's work status, given that he is married. The nexus between the husband's mother's employment status and her daughter-

in-law's employment status is created through the husband's preference formation. Because we attempt to identify the impact of the environment on preference formation, and preferences are believed to be stable, the environment's heterogeneity should be sufficiently large. In our context, the mother's work status should be sufficiently different from that of a mother staying at home. Accordingly, we focus on the effect of the mother's full-time employment on her son's preference because other forms of work, such as part-time employment or self-employment, may imply that mothers stay home for a substantial amount of time to spend time with the son. In fact, many women choose part-time employment or self-employment so that they can take care of household duties, including child rearing. The contradiction to the norm based on traditional gender role perceptions presumably arises when a woman decides to work full-time. Thus, we lump part-time or self-employed mothers together with non-working mothers.[3]

For the same reason, we focus on the wife's full-time work status. Even if a man has a strong preference for a traditional household, the man may well agree to his wife's part-time employment because the wife could still spend a sufficient amount of time on household production, including child rearing. Thus, we examine how the mother's full-time employment status affects his wife's full-time employment status. As shown by Fernandez et al. (2004), U.S. men raised by a working mother are more likely to marry women who work full-time. Alternatively, if being raised by a full-time working mother encourages a man's acquisition of household production skills, then the man

will devote more time to household production, and this makes his wife more likely to work full-time.

We specify the determination of a wife's full-time work status as the following probit model.

$$P(work_i = 1|mw_{hi}, x_i) = \Phi(\beta_1 mw_{hi} + x_i\beta_2), \tag{1}$$

where $work_i = 1$ if the wife of household i works full-time, $work_i = 0$ if she is a part-time worker, a self-employed or family business worker, or stays home. The dummy variable mw_{hi} is the dummy variable that takes one if the husband's mother worked full-time when he was 15 years old and zero otherwise; and x_i is the vector of the wife's characteristics in household i: wife's age, its square, the log of husband's income, a constant, and year dummy variables. This parsimonious model does not include the wife's years of education and fertility decisions and estimates the reduced-form effect of the husband's mother's work status on his wife's work status, including the effect through his marriage-matching and fertility decisions. In order to control for the marriage and fertility decisions, the following variables are added to x: wife's years of education, the number of children under age 6, and the number of children.

A man's mother's full-time employment might be endogenous because it may pick up family characteristics. To deal with this possible omitted variable bias, we include the husband's parents' years of education as proxy variables. Also, the husband's mother's work status may be correlated with the

region where the husband grew up, and this region is presumably correlated with the region of his current residence. The region of current residence may affect the wife's work decision through its industrial structure. The endogeneity of mw_{hi} due to unobserved regional characteristics will be addressed by including 47 prefectural dummies of husband's current residence and his residence at age 15 in the model.

Next, to directly examine the effect of the mother's full-time employment on her son's preference formation, we analyze how the mother's labor supply affects her son's stated preference regarding gender roles in the family. Specifically,

$$P(agree_i = 1 | mw_{hi}, z_i) = \Phi(\delta_0 + \delta_1 mw_{hi} + z_i \delta_2), \tag{2}$$

where $agree$ is the dummy variable that takes one if the respondent agrees with particular statement about gender roles (discussed below), and mw_{hi} is a dummy variable that indicates the husband's mother's full-time employment status when he was 15.[4] The vector of variables z_i includes years of education, age, its square, the residence location category (3: urban, 2: city, or 1: rural), and parents' years of education. The parameter vector δ_1 indicates the effect of the mother's work status on the husband's stated preference regarding gender roles. To estimate this parameter consistently, it is important to control for the current location of residence and the location of residence when the husband was 15 because those factors may affect both his preference and the mother's full-time employment. It is worth noting that the causality

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runs from the mother's full-time employment to the stated preference in one direction because the survey asks the mother's labor supply was the husband was 15, as well as his current preference toward female labor supply.

4   Data

We use repeated cross-sectional data from the Japanese General Social Surveys (JGSS) conducted in 2000, 2001, 2002, and 2003. The survey officially started in 2000 and the 2003 wave is the most recent available data as of February 2007.[5] The JGSS is designed to be the Japanese counterpart of the General Social Survey in the United States. Each cross-section includes about 3,000 individuals who are representative of all men and women between the ages of 20 and 89. The surveys adopt a two-step, stratified sampling method and were conducted during October and November of each survey year.

This survey asks standard survey questions regarding labor force status and family structure through face-to-face interviews. The interviewers collect information regarding the respondents' lives at age 15, and these questions include the mother's work status, the place of residence, and the parents' educational background. In addition, the survey asks respondents to fill out questionnaires that include sensitive questions that are collected before or after the interview. These questionnaires include several statements regarding the respondents' opinions about gender roles, and the respondents are asked whether they 1. agree, 2. somewhat agree, 3. somewhat disagree, or 4. disagree with each statement. The following four statements are used in

this study:

1. If a husband has sufficient income, his wife should not work.

2. Husbands should work outside the home and wives should keep the household.

3. A mother's job holding has a negative impact on the development of pre-primary school children.

4. It is more important for a wife to help her husband's career than to pursue her own career.

The responses 1: agree and 2: somewhat agree are lumped together and coded as $agree = 1$ and 3: somewhat disagree and 4: disagree are lumped together and coded as $agree = 0$.

Insert Table 1 Here

We consider two samples, and the construction of these two samples are tabulated in Table 1. Original sample pooling between 2000 and 2003 includes 12,299 observations. Among these observations, 5,559 observations are males. The sample size becomes 3,481 after dropping observations with missing values for their own characteristics, such as years of education. We further drop the observations with missing values on their parental educational background and work status at age 15, and this results in 2,811 observations. Among these observations, 2,411 observations with valid answers for the four opinion questions on appropriate gender role are defined as analysis sample 1. This sample is used to analyze the determinants of the men's

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subjective opinions about appropriate gender roles. To analyze the wives'
labor supply behavior, we further restrict the sample to married men and
their wives are aged between 20 and 60.[6] This additional sample restriction
reduces the sample size to 1,538 observations, as the bottom row of Table 1
shows.

Insert Table 2 Here

The descriptive statistics of analysis samples (1) and (2) by husband's
mother's work status are tabulated in Table 2. Panel A of Table 2 indicates
that men raised by full-time or part-time working mothers are younger than
the men raised by self-employed or non-working mothers. Men raised by
non-working mothers have more years of education than the men raised by
working mothers. This is perhaps because they belonged to wealthier house-
holds. This speculation is consistent with the fact that they have fathers
with more years of education and higher current income than the men raised
by working mothers.

An examination of the first row of Panel B of Table 2 reveals that those
men who are raised by full-time working mothers are more likely to have
wives who are also full-time employed. The probability of having a full-time
working wife for a man raised by a part-time or self-employed mother is even
lower than a man raised by a non-working mother. This result suggests that
classifying men by whether they were raised by full-time working mothers
or not is a natural way to analyze its effect on wife's full-time employment
status. However, as the rest of the rows in the table suggest, men raised by

full-time working mothers have different characteristics than men raised by mothers who were not full-time working.

Insert Table 3 Here

Table 3 tabulates the responses to the gender-stereotype statements. About 58 percent of men raised by non-working mothers agree with the statement, "If a husband has sufficient income, his wife should not work," while about 48 percent of men raised by full-time working mothers agree with this statement. The difference in responses is more striking for the statement, "Husbands should work outside the home and wives should keep the household." Of the men raised by non-working mothers, about 59 percent agree with this statement, but only 42 percent of men raised by full-time working mothers agree.

5 Results

5.1 Wives' employment

Table 4 reports the results of the probit estimation that regresses wives' full-time employment status on husbands' mothers' full-time work status when the husbands were 15 years old, along with the control variables, such as wife's age, its square, wife's years of education, the log of husband's income, and the husband's parents' years of education. The results in Column (1) indicate that men raised by full-time working mothers are about 4 percentage points more likely to have full-time working wives than men raised by mothers who were not full-time workers. However, the estimate is very imprecise

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and the coefficient is not statistically significant. Column (2) reports the estimation results controlling for wife's years of education, the number of children under age 6, and the number of children as additional explanatory variables. These results are not significantly different from the results in Column (1). This implies that the effect of mothers' work status on wives' work status does not occur through marriage-matching or fertility decisions. To allow for regional heterogeneity in the demand conditions for female full-time workers, the prefecture dummy variables are included in the regression, and the results are reported in Column (3). Again, the results are essentially unchanged by the additional controls.

Insert Table 4 Here

These results very weakly suggest that men raised by full-time working mothers are likely to have wives who also work full-time, but the estimated effects are all statistically non-significant. The signs of the coefficients are consistent with the findings by Fernandez et al. (2004) for the United States.

5.2 Men's stated preferences

We next report the results of the probit regression of men's responses to the gender stereotype statements on their mothers' employment status when they were adolescents. This approach enables us to directly examine the effect of mothers' full-time employment on men's stated preferences. In addition, we can examine this effect even among single men, in contrast to the analysis in the previous subsection that was possible only among married men.

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Insert Table 5 Here

Table 5 Panel A Column (1) reports the results of the probit regression of the response (=1 if agree) to the statement "If a husband has sufficient income, his wife should not work" on mothers' employment status, along with men's demographic characteristics. Those raised by full-time working mothers are 6 percentage points less likely to agree with this statement than those raised by mothers who were not full-time employed; the difference is statistically significant. Table 5 Panel A Column (2) reports the results of the specification that includes prefectural dummy variables for current and past residence. Even after controlling for prefectural heterogeneity, those men raised by full-time working mothers are 5 percentage points less likely to support the statement, although the statistical significance is marginal.

We repeat the same exercise for the responses to the other statements in the survey. The results of the regressions of the responses to the statement, "Husbands should work outside the home and wives should keep the household" appear in Columns (3) and (4) of Table 5 Panel A. Those men raised by full-time working mothers are 10 percentage points less likely to agree with this statement, and this coefficient is statistically significant. This result is preserved even after controlling for the current and past prefecture of residence. It is striking that those men raised by full-time working mothers are more likely to disagree with this strong and straightforward statement on appropriate gender roles.

The results of the analysis of the responses to the statement, "A mother's

job holding has a negative impact on the development of her pre-primary school children" appear in Columns (1) and (2) of Table 5 Panel B. Those men raised by full-time working mothers are 11 percentage points less likely to support this opinion than those raised by non-working mothers, and the difference is statistically significant. The findings are essentially unchanged when controlling for the prefectural dummy variables.

Columns (3) and (4) of Table 5 Panel B report the analysis results of the responses to the statement, "It is more important for a wife to help her husband's career than to pursue her own career." Those men raised by full-time working mothers are 6 percentage points less likely to agree with this statement than those raised by non-working mothers.

We also estimated the model that includes the independent dummy variables that indicate whether the mothers were part-time or self-employed workers, along with the full-time employment dummy variable and other explanatory variables. The results indicate that the men raised by mothers who were part-time workers or self-employed workers are equally likely to agree with the division of gender roles as men raised by non-working mothers. From this difference in the effect on son's preference formation, we infer that full-time working mothers are away from the home for long hours, and this strongly affects the formation of sons' preferences.

Overall, the results in Table 5 suggest that those men raised by full-time working mothers tend to disagree with the statements expressing gender stereotypes.

6   Stated preferences and actions

Some readers might wonder how husbands' stated preferences translate into actual behavior. Running regressions of actual action, such as wife's employment status on the husband's stated preference, would answer this question. However, cognitive dissonance theory suggests that people attempt to form their preferences so that they are consistent with their actions. Thus, when we attempt to run regressions of actions on stated preferences, the stated preferences are likely to be endogenous. To deal with this endogeneity, we could use the instrumental variable estimation method, in which the obvious candidate for the instrumental variable is the mother's work status during the male's adolescence. As we have learned from Table 4, there is no statistically significant correlation between the mother's full-time employment and his wife's full-time employment; this is a failure of the reduced-form estimation.

Insert Table 6 Here

We can find no other suitable instrument, and so we simply report the results of the probit regression of wife's full-time employment status on stated preferences and other control variables in Table 6. Readers are cautioned that these results do not indicate causation, but merely correlation. The results in Column (1) suggest that those husbands who agree with the statement, "If a husband has sufficient income, his wife should not work" are 5 percentage points less likely to have full-time working wives than those husbands who

disagree with the statement.

Column (2) suggests that the fact that a husband agrees with the statement, "The husband should work outside the home and his wife should keep the household" is not related to the wife's part-time working or self-employed probability. However, agreeing with this statement is associated with the wife's full-time working probability being as much as 12 percentage points lower.

The results reported in Column (3) are similar to those in Column (2). Those who agree with the statement, "A mother's job holding has a negative impact on the development of her pre-primary school children" are about 8 percentage points less likely to have full-time working wives. The consistency of the regression results in Columns (2) and (3) is natural because raising children could be considered the most crucial household duty.

Column (4) indicates that those who agree with the statement, "It is more important for a wife to help her husband's career than to pursue her own career" are about 9 percentage points less likely to have full-time working wives than those who disagree with the statement.

Table 6 overall reveals that stated preferences and wives' labor market status are highly correlated, although we cannot claim that stated preferences cause the wives' labor market outcomes. However, we would be surprised if this strong correlation is solely created by a reverse causation, running from wives' labor market status to stated preferences. The strong correlation presumably suggests some causality running from (stated) preferences to wives'

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labor market status. If this is true, then the analysis of the determination of stated preferences is an important economic analysis, as stated preferences eventually determine actions.

7 Conclusion

This paper examines the effect of being raised by working mothers on the formation of men's preferences regarding familial gender roles. The empirical implications of the model developed by Fernandez et al. (2004) are tested using the Japanese General Social Surveys, which consist of repeated, cross-sectional data sets. We did not find strong supporting evidence for the model's prediction that those men raised by full-time working mothers are more likely to have full-time working wives than men raised by mothers who did not work full time. The failure to find supportive evidence could be due to the small sample size and the test's lack of power.

To overcome the difficulty resulting from the small sample size, we directly tested the model's assumption that men raised by working mothers are less likely to hold traditional gender stereotypes. Using the recorded responses to statements regarding traditional, familial gender roles as the dependent variables, we found that men raised by full-time working mothers are significantly more likely to disagree with statements regarding traditional gender roles than the men whose mothers were not full-time workers, holding other variables constant. Also, they are less likely to think that having a working mother is disadvantageous for a child. We speculate that full-time working

mothers are away from the home for long hours, and this strongly affects the formation of sons' preferences.

The results described above complement the results obtained in Fernandez et al. (2004), which test the model's behavioral implications, by directly establishing a straightforward link between mothers' working status and sons' attitudes toward gender roles, using subjective responses to survey questions. This serves as a direct test of the validity of the assumption employed in the model by Fernandez et al. (2004).

One policy implication from this study is that education that exposes adolescents to working women may change their thoughts on gender roles. Direct examination of the effect of the policy variable on men's opinions of gender roles, such as the effect of the gender composition of school teachers on men's attitudes toward gender roles, would be an interesting future research topic that might derive fruitful policy implications.

The methodology employed in this study of using stated preferences can be used to examine the mechanism of the intergenerational transmission of labor market outcomes. It is generally difficult to identify the mechanisms behind the observed correlations between the labor market outcomes of parents and children because there are many paths through which parents' outcomes can affect children's outcomes. The suggested method of using stated preferences can partial out the importance of the endogenous formation of preferences from several other transmission channels.

Acknowledgement

Notes

[1] This is the authors' calculation, based on the Basic Survey of Employment Structure.

[2] This is the authors' calculation based on the Basic Survey of Employment Structure. The wage semi-elasticity is calculated by estimating the model: $P(emp = 1|x) = \Phi(\alpha \ln(wage) + ...)$, where emp is the dummy variable that takes 1 if the individual is employed and x is the demographic variables that include $\ln(wage)$. The calculation was implemented as a part of the analysis reported in Kawaguchi, Naito (2006). Semi-elasticity is defined as $\partial P(emp = 1|x)/\partial \ln(wage)$ evaluated at the sample mean of x. Also see Morita (2002) for estimates of semi-elasticity.

[3] We also include those who did not have a mother at age 15 in this category. Self-employed workers classified in this category may include those workers who work long hours as full-time workers, but this classification error attenuates our results, not otherwise.

[4] This probit model is derived from the latent variable model that $y^* = \delta_0 + \delta_1 mw_{hi} + z_i \delta_2 + u$ and $u|mw_{hi}, z_i \sim N(0,1)$, thus we assume the exogeneity of husband's mother's work status conditioning on z_i.

[5] The JGSS are designed and carried out at the Institute of Regional Studies at Osaka University of Commerce in collaboration with the Institute of Social Science at the University of Tokyo under the direction of Ichiro Tanioka, Michio Nitta, Hiroki Sato, and Noriko Iwai, with Project Manager Minae Osawa. The project was financially supported by a Gakujutsu Frontier Grant from the Japanese Ministry of Education, Culture, Sports, Science and Technology for the 1999-2003 academic years, and the datasets are compiled and distributed by the SSJ Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, the University of Tokyo.

[6] Throughout the analysis, the marital status is defined based on the current marital status. Being divorced, separated, or widowed is classified as not married.

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Table 1: Sample construction

Description	N
Original Sample	12299
Male	5559
Age, years of education, annual income, location, and prefecture are available	3481
Mother's work status and parents' education are available	2811
Husband's subjective answers are available for 4 items in 2000-2003: Analysis sample (1)	2411
Married, wife's age 20-60, wife's years of education, labor force status, the number of children are available: Analysis sample (2)	1538

Table 2: Descriptive statistics

		Mother's work status				
	Total	Not working	Full-time	Part-time	Self-employed	Not present
Panel A: Analysis Sample (1)						
Men's age	46.25	46.95	35.67	39.21	50.75	55.64
	(14.13)	(13.30)	(11.10)	(12.21)	(13.52)	(14.11)
Men's years of education	12.99	13.64	13.23	13.30	12.37	11.58
	(2.57)	(2.55)	(2.31)	(2.33)	(2.58)	(2.54)
Men's mother's years of education	9.74	10.16	10.56	10.81	8.90	8.52
	(2.60)	(2.58)	(2.29)	(2.45)	(2.48)	(2.27)
Men's father's years of education	10.23	11.09	10.93	10.96	9.19	8.85
	(3.22)	(3.53)	(2.89)	(2.80)	(2.88)	(2.66)
Men's annual income (Million yen)	5.25	5.92	4.98	4.49	5.07	4.77
	(4.16)	(3.55)	(2.90)	(2.29)	(5.18)	(3.35)
Regional Category	1.93	2.05	2.00	1.96	1.82	1.97
(3: 13 Big Cities, 2: City, 1: Rural)	(0.64)	(0.63)	(0.60)	(0.67)	(0.64)	(0.59)
Number of observations	2411	769	269	329	1011	33
Panel B: Analysis Sample (2)						
Wife is a full-time worker	0.22	0.21	0.26	0.17	0.23	0.27
Wife is a part-time worker	0.26	0.24	0.21	0.30	0.29	0.27
Wife is a self-employed	0.09	0.06	0.04	0.04	0.14	0.07
Wife's years of education	12.61	12.91	12.87	12.70	12.28	12.47
	(1.83)	(1.82)	(1.73)	(1.66)	(1.86)	(1.55)
Wife's age	44.04	45.89	39.41	37.94	46.39	45.33
	(9.87)	(9.75)	(9.17)	(8.80)	(9.27)	(10.07)
Number of children less than 6 years old	0.52	0.47	0.64	0.44	0.56	0.47
	(0.99)	(0.92)	(1.04)	(0.95)	(1.04)	(0.92)
Husband's age	46.55	47.75	41.74	39.11	49.06	48.47
	(10.62)	(10.42)	(9.98)	(9.41)	(9.83)	(11.21)
Husband's years of education	13.18	13.69	13.55	13.25	12.69	11.73
	(2.44)	(2.47)	(2.38)	(2.15)	(2.43)	(2.19)
Husband's mother's years of education	9.74	10.13	10.69	10.26	9.05	8.80
	(2.56)	(2.57)	(2.61)	(2.20)	(2.46)	(2.57)
Husband's father's years of education	10.24	11.10	10.90	10.51	9.29	9.20
	(3.20)	(3.52)	(2.96)	(2.87)	(2.84)	(2.31)
Husband's Annual Income (Million yen)	6.11	6.75	5.90	5.32	5.90	5.28
	(4.48)	(3.42)	(2.97)	(2.10)	(5.87)	(1.67)

Regional Category	1.93	2.04	1.98	1.98	1.81	2.07
(3: 13 Big Cities, 2: City, 1: Rural)	(0.64)	(0.62)	(0.67)	(0.60)	(0.64)	(0.46)
Number of Observations	1538	521	167	195	640	15

Table 3: Response to questions by mother's work status.

Sample: Analysis sample (1)

| Statement | Percentage who "agree" to the statement | | | | |
| | Mother's Work Status at Age 15 | | | | |
	Not working	Full-time	Part-time	Self-employed	Not present
"If a husband has sufficient income, his wife should not work."	58.4	46.8	49.2	56.1	57.56
"Husbands should work outside the home and wives should keep the household."	59.3	42.8	48.6	60.4	57.6
"A mother's job holding has a negative impact on the development of pre-primary school children."	46.6	37.2	43.8	49.5	45.5
"It is more important for a wife to help her husband's career than to pursue her own career."	56.6	39.4	48.9	54.6	63.6
Number of observations	769	269	329	1011	33

Table 4: Probit regression of wife's full-time employment.

Sample: Analysis sample (2)

Dependent Variable: 1: Full-time employed, 0: Otherwise

	(1)	(2)	(3)
Mother was a full-time worker at age 15	0.04	0.05	0.03
	(0.04)	(0.04)	(0.04)
Wife's education, fertility, parents' education	No	Yes	Yes
Prefecture dummy	No	No	Yes
Prefecture dummy age 15	No	No	Yes
Log Likelihood	-792.46	-786.69	-722.73
N	1538	1538	1524

Note: Marginal effects are reported. Standard errors are reported in the parentheses below the coefficients. The standard errors are calculated so that the t-values are equal to the corresponding probit coefficients. All columns include wife's age, its square, the log of husband's income, a constant, and year dummies, but the coefficients are suppressed. Column (2) also includes wife's years of education, the number of children under age 6, the number of children, the husband's mother's years of education, and the husband's father's years of education, in addition to the variables included for column (1). Column (3) in addition includes prefecture dummy variables. Observations are dropped due to a perfect prediction for Column (3).

Table 5: Probit regression of husband's opinion of gender roles on husband's mother's work status

Sample: Analysis sample (1)

Dependent variable: 1: Agree, 0: Disagree

Panel A

Statement	"If a husband has sufficient income, his wife should not work."		"Husbands should work outside the home and wives should keep the household."	
	(1)	(2)	(3)	(4)
Mother full-time at 15	-0.06	-0.05	-0.10	-0.10
	(0.03)	(0.03)	(0.03)	(0.04)
Year dummy	Yes	Yes	Yes	Yes
Prefecture dummy	No	Yes	No	Yes
Prefecture dummy age 15	No	Yes	No	Yes
Log likelihood	-1628.58	-1569.14	-1573.09	-1486.10
N	2411	2399	2411	2399

Panel B

Statement	"A mother's job holding has a negative impact on the development of pre-primary school children."		It is more important for a wife to help her husband's career than to pursue her own career.	
	(1)	(2)	(3)	(4)
Mother full-time at 15	-0.11	-0.10	-0.06	-0.05
	(0.03)	(0.03)	(0.03)	(0.03)
Year dummy	Yes	Yes	Yes	Yes
Prefecture dummy	No	Yes	No	Yes
Prefecture dummy age 15	No	Yes	No	Yes
Log likelihood	-1614.29	-1557.69	-1586.39	-1523.07
N	2411	2399	2411	2399

Note: Marginal effects evaluated at the sample mean are reported. Standard errors for the marginal effects are in parentheses. The standard errors are calculated so that the t-values are equal to the corresponding probit coefficients. Years of education, age, its square, location category variable (3: 13 big cities, 2: other cities, and 1: rural), father's years of education, mother's years of education, year dummy variables, and a constant are included in all of the specifications, but the coefficients are suppressed. Observations are dropped due to perfect predictions for columns (2) and (4).

Table 6: Probit regression of wife's full-time employment on stated preferences.

Sample: Analysis sample (2)

	(1)	(2)	(3)	(4)
"If a husband has sufficient income, his wife should not work." (Agree=1)	-0.05 (0.02)	-	-	-
"Husbands should work outside the home and wives should keep the household." (Agree=1)	-	-0.12 (0.02)	-	-
"A mother's job holding has a negative impact on the development of pre-primary school children." (Agree=1)	-	-	-0.08 (0.02)	-
"It is more important for a wife to help her husband's career than to pursue her own career." (Agree=1)	-	-	-	-0.09 (0.02)
Log Likelihood	-720.62	-707.58	-715.18	-713.62
N	1524	1524	1524	1524

Note: Marginal effects evaluated at the sample mean are reported. Standard errors for the marginal effects are in parentheses. The standard errors are calculated so that the t-values are equal to the corresponding probit coefficients. Wife's years of education, her age, its square, the number of children under age 6, the number of children, the log of husband's income, husband's parents' years of education, year dummy variables, year dummy variables, and a constant are included in all of the specifications, but the coefficients are suppressed.