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Discussion Paper

Intergenerational Transmission of Employment and Working Behavior of Japanese Wife *

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Abstract

Using the 2009-2016 Japan Household Panel Survey, this study examines whether mother-in-law's former employment affects wife's working behavior in Japan. The driving mechanisms behind this relationship is also investigated by testing the effect of mother's former employment on her son's attitudes toward gender roles as well as on husband's skills regarding household chores, paid limited attention in the literature. Main findings suggest that wife's employment is positively associated with mother-in-law's former employment. The influence of a working mother on her son's attitude, tested by employment decision of wife with a little child and husband's life satisfaction, is found statistically significant and positive. In addition, no significant findings are determined the relationship between mother-in-law's employment and time spent by a husband in housework and childcare. Taken together, even though a working mother-in-law shapes son's preferences and beliefs toward gender roles to have a working wife, husband takes an inactive role regarding household chores irrespective of his mother's employment. These results point out that the older generation's employment leads to increase in the current generation's labor supply in Japan by only affecting child's preference rather than skills.

JEL classification: J16, J21, J22

Keywords: Intergenerational transmission, labor supply, preference, endowment, gender roles

1. INTRODUCTION

The labor force participation of Japanese women aged between 15 and 64 years old increased significantly over the last half century. The results of the Labor Force Survey, conducted by Ministry of Internal Affairs and Communications, show that whereas the female labor force participation(LFP) rate was 54% in 1968, it rose to 71.3% in 2018. Moreover, the same survey points out that one of the greatest increases in female labor force participation took place in 25-34 years old women. The LFP of these women increased from 46.8 % in 1970 to 80.2 % in 2018. Kawaguchi and Miyazaki (2009) explains the change in employment rate of women from 1987 to 2002 with the rise in real wages women received [1]. In addition, particularly, with The Equal Employment Opportunity Law, accepted in 1985 and took effect in 1986, forbidding gender discrimination regarding hiring, promotion, firing and retirement (Edwards, 1988), both higher education decisions of young women was affected (Edwards and Pasquale, 2003) and also the proportion of women working full-time increased (Abe, 2011).

With the higher presence of women in labor market, traditional beliefs toward gender roles have partly reshaped during this same period. Retherford and Ogawa (2005) states that traditional statement describing husband as breadwinner and wife as one staying at home was agreed by 71 % of women in 1982 as it decreased to 46 % in 1997. Furthermore, one of the recent surveys, National Survey on Family in 2008, conducted by the National Institute of Population and Social Security Research, point outs that the statement "The husband should bring home income while the wife concentrates on housework" is agreed by 45% of women, while 55% of them disagree. Moreover, 82.9% of women respondents agree the statement "The husband should take the same amount of responsibility for housework and child-rearing as his wife does" (Nishioka et al., 2012). The fact is, the ratio of working wives who agree the first statement are between 33% and 44% as it is 55% for housewife. Additionally, the percentage of working wives who agree the second statement compared to housewives are higher.

Considering these changes throughout society, an increase in the amount of working women leads new type of man [2] to emerge. Fernández et al. (2004)'s innovative study argues that this man raised in a household that a mother worked is an important determinant of the increase in female labor force participation. The idea behind the relationship between mother-in-law and wife's employment is supported by two mechanism: preference, technology/endowments (Fernández et al., 2004). The first mechanism suggests that a

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[1] Women aged 25 to 29 is referred by Kawaguchi and Miyazaki (2009). Contractual monthly cash earnings for women aged 25 to 29 increased by 43 % from 1985 to 2000, and the increase in monthly salary is higher for those aged 30 to 34, which is 54 %. The calculation is done by author of this paper. The information is obtained from Statistics and Information Department, Minister's Secretariat, Ministry of Health, Labour and Welfare.

[2] Fernández et al. (2004) defines this man as one raised in a different family model in which mother works.

presence of a working woman is usual and natural for a man with a working mother. He is less opposed to have a working wife compared to his peers. In addition, mother transmits her attitudes to her child, and thus son's preference and taste determined by parents motivates him to choose a working wife. Accordingly, the increase in the amount of this type of man leads more women to invest in education and skills, and thus increases woman's labor supply. Fernández et al. (2004) states that individual looks for a spouse who is similar to his/her opposite-sex parents as claimed by a famous psychoanalyst Sigmund Freud. This brings mother complex, invested by Freud, known as "Mazakon" in Japanese slang, in mind which might be the proper term to comprehend to the effect of Japanese mother on her son's preference. This term in Japan mostly refers to a man who looks for an ideal woman like his mother who does everything for her son (Yamaguchi, 1992). It is typically expected that the new image of Japanese mother who has a strong bond to her son in the house is more likely to boost her son's preference to seek out a working wife instead of a non-working wife having less similarities with herself.

The second mechanism assumes that one growing up with working mother tends to cooperate in the household and directly becomes better partner. Hence, woman gets more time to work or invest her skills. In Japan, once breadwinner couples that a man is responsible for money and a woman stays at home are partly replaced with dual-earner couples, men become a part of unpaid work, and thus women' roles in a household slightly got weaker. The 2008 National Survey on Family in Japan indicates that a husband helps her wife for taking out garbage, grocery shopping and clearing the table regardless of her employment status (Nishioka et al., 2012). The proportion of husbands helping to full-time or part-time working wife for laundry and preparing meals are greater than those having a self-employed, family worker or unemployed wife. The son brought up by a household where a mother worked and a father attempted to do more housework compared to other households might get a skill to assist household chores. However, recent statistics showing that the time wife spends on unpaid work, such as household chores, childcare and so on, is still significantly higher than Japanese husband strongly point that Japanese men play weak role in the house even if they have abilities. The Survey on Time Use and Leisure Activities in 2016, conducted by Statistics Bureau, Ministry of Internal Affairs and Communications, shows that married working men aged 30-34 spend 14 minutes on housework, 37 minutes on childcare, 42 minutes on watching TV, and 93 minutes on rest while working wives aged 30-34 spend on 92 minutes on housework, 70 minutes on childcare, 65 minutes on watching TV, and 84 minutes on rest in a week. The average time non-working wives spend on housework and childcare is more than double working wives' time. Although one of the reasons a working wife spends less time might be husband's contribution, Ueda (2005) states that husband's help, reducing wife's housework time, is not enough to compensate most of the time spent by wife on housework in dual-earner households.

The objective of this paper is to investigate the intergenerational transmission of husband's mother's former employment to wife's current employment in Japan by using the 2009-2016 Japan Household Survey (JHPS). Following to the previous studies, initially, the effect of mother-in-law's former employment, which is the indirect measure of culture (Farre and Vella, 2013) and of husband's attitudes toward gender roles (Bütikofer, 2013), on wife's employment is tested. Even though substantial research has been devoted to investigate the preference mechanism based on examining the effect of working mother on her son's attitudes, relatively limited attention has been paid whether being raised by a working mother makes her son better partner regarding home production or not. This study contributes to the recent literature by examining both mechanisms behind the intergenerational transmission in Japan.

This study provides empirical evidence from random effect probit models that wife with a working mother-in-law is more likely to work in Japan unlike Kawaguchi and Miyazaki (2009)'s probit model results which show that the relationship between a working mother-in-law and wife's supply in Japan are insignificant. The potential explanation is that this study applied different data source and econometric models. Furthermore, data source in this study covers recent and long term compared to Kawaguchi and Miyazaki (2009)'s data source. Additionally, broadened definition of working is preferred in this study [3]. The results of preference mechanism examining how having a working mother affects her son's attitude present positive and significant effect of a mother-in-law worked when his son was 15 years old on labor supply of wife with a little child. Besides, the analyses reveal that having a working wife improves husband's life satisfaction if he grew up with a working mother. These results suggest that a working mother leads to increase in less traditional man in a society, and thus augments labor supply of women. Different from Kawaguchi and Miyazaki (2009), this study also pays attention the endowment mechanism. However, no significant results are found the relationship between mother-in-law's employment and unpaid time couples spend. Taken together, even though a working mother-in-law shapes son's preferences to have a working wife and beliefs toward gender roles, husband takes an inactive role regarding household chores irrespective of his mother's employment.

The remainder of this study is organized as follows. In Section 2, literature review is

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[3]The definition of working covers only full-time mother-in-law and full-time wife in the paper of Kawaguchi and Miyazaki (2009). In the data source this study uses, employment status of mother-in-law as full-time and part-time is not available. Furthermore, Oishi (2019) states that working part-time was not popular in the 1970s, and only 10% of women worked less than 35 per week. Regarding wife working part-time, institutional incentives such as spousal tax deduction, social insurance premiums are seemed as advantages both by couples and also by employer (Oishi, 2019). In this case, common decision couples make becomes one of the driven factors to work part-time. Moreover, working part-time might be enough to self-sufficiency of wife. According to Del Boca et al. (2000), being independent and looking for a status is more important than earning money for women. In addition, they state that if husband lets her wife to sell her time to the market in case of the loss of his job, it is motivated by his attitudes. Considering very high participation of part-time job, husband are not strict to have a working wife. Therefore, part-time working women fit to the purposes of this study.

reported. Section 3 presents estimation model and method. Data set and the steps of sample selection are introduced in Section 4. Estimation results are provided in Section 5. Section 6 concludes.

2. LITERATURE REVIEW

The recent literature on intergenerational transmission has suggested that labor supply of married women are highly associated with a husband brought up by a working mother. Using the data of Bank of Italy in 1995, Del Boca et al. (2000) analyzes the effect of husband's unemployment status on wife's labor supply decision. Their probit model findings suggest that wife's employment is determined by her own mother and her husband's mother, a proxy of couple's culture toward a working woman. Fernández et al. (2004) study on how mother's former employment influence her son's wife's employment using the General Social Survey in the US. Their probit results show the positive effect of mother-in-law's employment on female labor force participation as well as insignificant effect of wife's mother on her own labor supply. This finding is confirmed by a series of studies following to Fernández et al. (2004), such as Butikofer(2012) for Switzerland, Morrill and Morrill (2013) for the US, Campos-Vazquez and Velez-Grajales (2014) for Mexico, Li and Liu (2018) for China, Papapetrou and Tsalaporta (2018) for Greece as a few studies suggest no significant effect regarding the relationship between mother-in-law's former employment and wife's labor supply (Kawaguchi and Miyazaki, 2009; Johnston et al., 2013).

Following to Fernández et al. (2004), Kawaguchi and Miyazaki (2009), whose study is very close to my study, test the effect of husband's mother's employment on wife's labor supply as well as the preference mechanism using repeated cross-sectional data from the Japanese General Social Surveys 2000-2003. The finding from probit model shows the positive association between wife's employment and mother-in-law's employment, but is statistically insignificant. In addition, they suggest that men raised by a working mother are less likely to hold traditional gender roles. Farre and Vella (2013)'s examinations of the relationship between mother and child regarding attitudes and labor supply reveal that the less traditional view mother has, the more egalitarian view her son has. Furthermore, they show that men raised by working mother are more likely to have egalitarian view, and husband's beliefs positively affect wife's work decision. Johnston et al. (2013) determine direct and positive impact of mother's attitudes on her son's non-traditional gender attitudes as well as the positive effect of her attitudes on daughter-in-law's employment status. Tolciu and Zierahn (2012)'s study, which the impact of social norms regarding work commitment and gender roles on wife's employment in Germany is focused on, confirms the positive influence of husband supporting non-traditional gender roles on wife's employment.

Li and Liu (2018)'s comprehensive study assesses intergenerational transmission of women' employment with testing both mechanisms using the Chinese General Social Survey. Their initial findings show that wife's working behavior is positively affected by her mother-in-law's employment. To test preference mechanism, the impact of working mother on her son's attitudes as well as his behaviors' effect on wife's labor supply is estimated. They provide weak evidence for the relationship between working mother and her son's attitudes even though the strong correlation between husband's attitudes and wife's employment. Additionally, the effect of a working wife on husband's subjective well-being is analyzed in order to reveal how husband feels if he is married with a working woman. No significant relationship between happiness of husband and wife's labor supply is indicated. Whether the endowment mechanism plays a role on working behavior of women is tested by sibling composition, living arrangement of couples, and time allocation of husband and wife. The positive effect of working mother-in-law on wife's working hours as well as its negative effect on husband's working hours is shown.

3.   Estimation Model and Method

To test the relationship between mother-in-law's former employment and wife's employment by using panel data from 2009 to 2016, random effect probit model is estimated as follows:

$$P(E_{it}^w = 1|E_i^m, X_{i1}, X_{it2}, c_i) = \Phi(E_i^m \alpha_1 + X_{i1}\beta + X_{it2}\gamma + c_i) \tag{1}$$

where E^w represents the current employment status of wife, which equals 1 if wife is self-employed, professional, salaried employee[4] and 0 otherwise. E^m refers to husband's mother's employment(mother-in-law of wife) when he was 15 years old, which takes the value 1 if she was self-employed, professional or wage worker, and 0 if she was a worker at family business, working at home, consigned work or subcontractor, or unemployed.

X_{i1} and X_{it2} consist of the following variables: age of husband and wife at time t; education dummies of wife and husband, defined as high school or lower and college or higher, education of parents, defined in three categories: junior high school, high school, and college or higher [5]; husband's income(log) at time t; having a child aged 0-6 at time t; number of children at time t; prefecture husband lived in when he was 15 years old; city size a couple lives in, and year dummies. c_i is the unobserved random effect, which is assumed as it is uncorrelated with independent variables.

The effect of mother-in-law's former employment on wife's working hours is tested by

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[4]Salaried employee includes full-time and part-time worker.

[5]Couples who define their education level as other are added to base category of education which is high school or lower. Parents choosing other are added to base category of education, junior high school.

the following linear random effect model:

$$H_{it} = E_i^m \alpha_1 + X_{i1}\beta + X_{it2}\gamma + c_i + \epsilon_{it} \tag{2}$$

where H represents working hours per week including overtime wife. X_{i1} and X_{it2} are control variables defined in right-hand side of equation 1. c_i is the unobserved random effect, and ϵ_{it} is a normally distributed random error.

In the study of Kawaguchi and Miyazaki (2009), four statements about gender roles, representing Japanese beliefs, are used to test whether mother-in-law's former employment influence on her son's behaviors. Following to one of the statement "A mother's job holding a negative impact on the development of pre-primary school children." of Kawaguchi and Miyazaki (2009) to assess preference mechanism, wife with a little child is considered. It is expected that the husband raised by a working mother is more likely to stand by her wife to work regardless of having a child younger than 6 or 12 while the husband with a non-working mother tends to expect her wife to stay at home, particularly after having a child. Equation (1) is estimated by restricting the dependent variable as wife with a child aged 0-6 and 0-12. If a married woman both has 0-6 year-old /0-12 year-old child(ren) and also works, it equals 1, and if a wife with a little child does not work, it takes the value, 0.

Additionally, using the JHPS between 2011 and 2016[6], the effect of a working wife on husband's life satisfaction with a scale of 0 referring to "completely dissatisfied" to 10 referring to "fully satisfied" in a given year is considered. Another statement "It is more important for a wife to help her husband's career than to pursue her own career" in the work of Kawaguchi and Miyazaki (2009) is considered as wives should sacrifice her own career for her husband, and make her husband's utility higher. If a husband was brought up in a different family which mother worked, having a working wife is less likely to bother him. Bütikofer (2013) tests the effect of wife's income contribution on financial and general life satisfaction of husband. In Li and Liu (2018), whether a married woman's working affects her husband's happiness is tested. Li and Liu (2018) states that wife's labor supply is better indicator than wife's income contribution because wife whose earning is more than husband's makes him unpleasant even if husband is less traditional man.

Under the endowment mechanism, linear random effect models for unpaid time allocation of couples[7] are examined so as to illuminate whether husband with a working mother is cooperative in the house or not. It is assumed that a married man brought up by a working mother is more ready to be a part of household chores, and thus he provides her wife extra time to invest herself. In Japan, married women spend very long time on childcare irrespective of employment status compared to time spent by husbands so husband taking care of their children, in particular pre-school one, gives a chance to her

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[6]The question related to satisfaction has been started to be asked to the respondent in 2011.

[7]How respondents allocate their time on housework and childcare has been started to be asked in 2011 and 2010, respectively.

wife who wants to work or works longer. Rather than using working hours of the couple[8] as Li and Liu (2018), I used direct information about time spent in household chores and little child.

4. DATA AND SAMPLE SELECTION

The Japan Household Panel Survey (JHPS) has been implemented by the Panel Data Research Center at Keio University annually since 2009 on 4,022 households in Japan. The single and married respondents, interviewed every January, are chosen by means of two-stage stratified random sampling. The survey collects extensive detailed information on the respondents and their spouses, such as socioeconomic characteristics of the respondent and their spouse, their daily lives, their household's finances, and housing. In 2011, the respondents and their spouses were asked for their families, which provides for questioning whether mother's employment when husband was 15 years old affects wife's employment or not.

The sample is selected according to the following steps. First, of those 4,022 households in 2009, 2,888 married couples[9] are chosen. Second, households whose wives are between the ages of 25 and 60 are selected. This reduces the number of the households from 2,888 to 1,917. Last step is to drop dead mother-in-law and father-in-law when husband was 15 years old, reducing 1,917 households to 1,863 households in 2009.

Table 1 lists descriptive statistics of the main variables in terms of mother-in-law's employment(husband's mother). 64% of wives whose mother-in-law worked when husband was 15 years old work as self-employed worker, professional, full-time or part-time worker. This is 58% for those whose mother-in-law did not work. The proportion of working hours of wives with working mother-in-law are 2 hours higher than those with a non-working mother-in-law. While the proportion of women graduates from at least a college with working mother-in-law is 42 %, those with non-working mother-in-law are 48 %. Moreover, husbands with a non-working mother are more educated than those with working mother, and their incomes are higher. 15 % of working mothers-in-law have at least a college degree, which is just 1 % higher than non-working mothers-in-law. Table 2 reports wife's employment status by mother-in-law and mother's employment. As around 60 % of married women with working mother-in-law are salaried employee, including part-time or full-time worker, 56 % of wives with a non-working mother is salaried employee. These are very close to the percentage of wife with a working and non-working mother. The proportion of unemployed women are 27 -28 % if mother(-in-law) worked.

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[8]Working hours of a married woman is used in Equation 2. The estimation results of husband's working hours is statistically insignificant. The possible explanation is that 80% of them is a salaried worker, working at least 40 hours per week that the effect of mother's employment on her son's working hours is highly weak.

[9]Divorced is counted as single.

Statistics about education level of wife's own mother and father are reported in Table 3.

Time spent in unpaid work, consisting of housework and childcare, is listed in Table 4. Husbands with a working mother spend 2 hours per week on housework, including preparing meals, laundry, grocery shopping, cleaning. This is a bit lower than those with non-working mother. Husbands with a child aged 0-12 spend 6 hours per week if their mother worked. In addition, wives with a working mother-in-law spend 26 hours and 41 hours per week on housework and child rearing as those with non-working mother-in-law is around 27 hours and 42 per week, respectively. Regardless of mother-in-law's employment, Table 4 shows that wives spend considerably higher time on housework and childcare than husbands spend.

Table 1: Descriptive statistics of the main variables by mother-in-law's working

Variables	Mother-in-law Working[1]			Mother-in-law Not working [2]		
	Obs.	Mean	St.Dev.	Obs.	Mean	St.Dev
Wife's working	3,884	0.64	0.48	5,067	0.58	0.49
Wife's working hours	3,802	21.26	18.93	4,930	19.14	19.01
Wife's age	3,926	43.96	8.47	5,126	46.31	8.33
Wife's education						
High school or lower	3,766	0.58	0.49	5,002	0.53	0.50
College or higher	3,766	0.42	0.49	5,002	0.48	0.50
Husband's age	3,926	45.87	9.44	5,126	48.87	9.30
Husband's education						
High school or lower	3,800	0.54	0.50	5,043	0.44	0.50
College or higher	3,800	0.46	0.50	5,043	0.56	0.50
Husband's income	3,810	524.86	292.85	4,976	576.48	366.44
Number of children	3,926	1.70	1.00	5,126	1.74	0.96
Presence of child aged 0-6	3,926	0.25	0.43	5,126	0.19	0.39
Mother-in-law's education						
Junior high school	4,958	0.21	0.41	4,964	0.37	0.48
High school	3,875	0.48	0.50	4,964	0.49	0.50
College and higher	3,875	0.15	0.36	4,964	0.14	0.35
Father-in-law's education						
Junior high school	3,787	0.41	0.49	4,958	0.40	0.49
High school	3,787	0.43	0.50	4,958	0.39	0.49
College and higher	3,787	0.16	0.37	4,958	0.21	0.41

Source: Japan Household Panel Survey (2009-2016).

Notes: Obs. and St.Dev. are the abbreviation of observation and standard deviation, respectively. [1] Working includes self-employed, professional, and wage worker. [2] Not working consists of family worker, working at home, consigned worker, and unemployed.

5.   Estimation Results

Table 5 presents the results of random effect probit models and linear random effect models. At first, the effect of mother-in-law's former employment on wife's employment is tested without control variables. The finding in column (1) shows that a married wife with

Table 2: Descriptive statistics of wife's employment status by mother(-in-law)'s working

Wife's working	Mother-in-law Working[1] Percentage	Mother-in-law Not working [2] Percentage	Mother Working[1] Percentage	Mother Not working [2] Percentage
Self-employed worker	3.40	1.91	2.76	2.25
Professional	0.64	0.67	0.51	0.82
Family worker	5.30	6.71	6.64	5.80
Working at home	1.03	0.97	0.84	1.11
Full-time worker	20.55	16.76	19.45	16.88
Part-time worker	39.70	38.74	40.06	38.05
Commissioned employee	2.27	2.57	1.97	2.80
Unemployed	27.11	31.68	27.78	31.84
Number of observation	3,884	5,067	4,309	4,397

Source: Japan Household Panel Survey (2009-2016).

Notes: [1] Working includes self-employed, professional, and wage worker. [2] Not working consists of family worker, working at home, consigned worker, and unemployed.

Table 3: Descriptive statistics of education level of wife's family by mother's employment

Variables	Mother Working[1] Obs.	Mean	St.Dev.	Mother Not working [2] Obs.	Mean	St.Dev.
Mother's education						
Junior high school	4,301	0.34	0.48	4,388	0.31	0.46
High school	4,301	0.50	0.50	4,388	0.54	0.50
College and higher	4,301	0.16	0.36	4,388	0.15	0.36
Father's education						
Junior high school	4,245	0.39	0.49	4,341	0.37	0.48
High school	4,245	0.43	0.49	4,341	0.37	0.48
College and higher	4,245	0.18	0.39	4,341	0.26	0.44

Source: Japan Household Panel Survey (2009-2016).

Notes: [1] Working includes self-employed, professional, and wage worker. [2] Not working consists of family worker, working at home, consigned worker, and unemployed.

a husband raised by a working mother is more likely to work. After adding other variables, the marginal effect of mother-in-law's employment slightly changes but still significant at 1 %. Following to Fernández et al. (2004), the effect of own mother is also added to the model. Tanaka (2008) states that working mother has an effect on her daughter as a role model. The results listed in column (3) of Table 4 suggest that there is no relationship between mother's former employment and wife's employment. This study also examines how mother(-in-law)'s employment affects her daughter(-in-law)'s working hours. The result from linear random effect model without controlling other variables reveals that the wife with a working mother-in-law works longer as seen column (4). The findings of the full model are reported in column (6). As statistically significant and positive correlation between mother-in-law's working and wife's working hours is found, the result shows no relationship between wife's employment and mother's employment. All specifications point

Table 4: Descriptive statistics of time couples spend in housework and childcare by mother-in-law's working

Variables	Mother-in-law Working[3]			Mother-in-law Not working [4]		
	Obs.	Mean	St.Dev.	Obs.	Mean	St.Dev
Housework time of husband[1]	2,683	2.08	4.04	3,480	2.17	5.40
Childcare time of husband having child aged 0-12[2]	1,469	6.20	9.91	1,547	5.33	9.05
Housework time of wife[1]	2,710	26.25	16.65	3,522	27.35	17.65
Childcare time of wife having child aged[2] 0-12	1,382	40.67	37.36	1,467	41.61	36.29

Source: [1] Japan Household Panel Survey (2011-2016). [2] Japan Household Panel Survey (2010-2016)

Notes: Obs. and St.Dev. are the abbreviation of observation and standard deviation, respectively. [3] Working includes self-employed, professional, and wage worker. [4] Not working consists of family worker, working at home, consigned worker, and unemployed.

out that wife's labor supply is highly correlated with mother-in-law's former employment. In addition to main findings, presence of a little child leads to decrease the probability of wife to work as well as her working hours.

The findings of preference mechanism from random effect probit models and linear random effect models are given in Table 6. How mother-in-law's former employment affects her son's attitude is examined using wife having a preschool child or 0-12 year-old child. The findings show that mother-in-law's working affects wife's working positively even if a married woman has a little child as seen in columns (1)-(4). These results suggest that the husband with a working mother expects his wife to stay at market instead of being at home to full-day childcare. Additionally, the relationship between husband's life satisfaction and wife's working is analyzed to understand how husband feels if he has a working wife. It is found that a working wife negatively influences on husband's life satisfaction. However, the coefficient of interaction term of mother-in-law's employment and wife's employment is statistically significant and positive. This indicates that a working wife augments her husband's life satisfaction if his mother worked in the past. Furthermore, household income and a wife with at least college degree make his life better. Taken together, a working mother brings up less traditional son, and thereby the idea about having a working wife is not unusual for this man.

The results of time allocation of husband and wife in terms of housework and childcare are reported in Table 7. The coefficients of housework time of husband are found negative and statistically insignificant in columns (1) and (2). In spite of the fact that the coefficient of mother-in-law's working in column (3) is positive and statistically significant, it becomes insignificant and negative once controlling other variables in column (4). Accordingly, husband with a working mother has no effect neither on housework nor childcare. Moreover, the effect of mother-in-law's working has no impact on wife's unpaid time in the household. Overall, even though having a working mother affects her son's preference and leads to increase wife's labor supply, being raised in a different family type is not enough to get more household skills.

Table 5: Estimation results of intergenerational tranmission of employment

Outcome variables:	Wife's working			Wife's working hours		
	RE Probit			Linear RE		
	(1)	(2)	(3)	(4)	(5)	(6)
Mother-in-law's working	0.148***	0.130***	0.159***	2.234***	2.291**	2.478**
	(0.047)	(0.048)	(0.050)	(0.857)	(0.935)	(0.978)
Mother's working	-	-	0.033	-	-	0.969
			(0.048)			(0.951)
Age(W)	-	-0.006	-0.004	-	-0.003	-0.000
		(0.008)	(0.009)		(0.152)	(0.176)
College degree or higher(W)	-	0.018	0.037	-	1.103	1.357
		(0.051)	(0.053)		(0.955)	(1.021)
Age(H)		0.004	0.003		0.144	0.133
		(0.007)	(0.008)		(0.136)	(0.158)
College degree or higher(H)	-	-0.040	-0.031	-	-1.445	-1.460
		(0.053)	(0.053)		(0.996)	(1.029)
Income(log)(H)	-	0.011	0.008	-	0.035	0.083
		(0.011)	(0.012)		(0.192)	(0.193)
Presence of a child aged 0-6	-	-0.264***	-0.255***	-	-4.981***	-4.621***
		(0.043)	(0.044)		(0.676)	(0.708)
Number of children	-	0.036*	0.030	-	0.521	0.481
		(0.018)	(0.019)		(0.373)	(0.386)
Mother-in-law's education						
High school	-	-0.001	0.014	-	-0.772	-0.480
		(0.061)	(0.065)		(1.158)	(1.231)
College or higher	-	-0.064	-0.033	-	0.508	0.236
		(0.094)	(0.097)		(1.792)	(.908)
Father-in-law's education						
High school	-	-0.023	-0.018	-	-0.479	-1.143
		(0.062)	(0.063)		(1.149)	(1.226)
College or higher	-	-0.027	-0.053	-	0.716	0.077
		(0.080)	(0.087)		(1.519)	(1.655)
Mother's education						
High school	-	-	0.071	-	-	0.523
			(0.065)			(1.174)
College or higher	-	-	-0.063	-	-	0.009
			(0.099)			(1.617)
Father's education						
High school	-	-	0.019	-	-	-0.142
			(0.061)			(1.145)
College or higher	-	-	0.013	-	-	0.119
			(0.080)			(1.449)
Constant	-	-	-	18.461***	11.058***	10.591**
				(0.652)	(3.849)	(4.325)
City size	-	YES	YES	-	YES	YES
Prefecture(H)	-	YES	YES	-	YES	YES
Prefecture(W)	-	-	YES	-	-	YES
Year	YES	YES	YES	YES	YES	YES
N	8951	7877	7244	8732	7700	7100

Notes: Marginal effects of probit model are reported. Standard deviation in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. H and W refer to husband and wife, respectively. Reference level of parents(-in-law)'s education is junior high school.

Table 6: Estimation results of preference mechanism

	Employment of wife with a child aged 0-6		Employment of wife with a child aged 0-12		Husband's life satisfaction	
	RE Probit		RE Probit		Linear RE	
	(1)	(2)	(3)	(4)	(5)	(6)
Mother-in-law's working (1)	0.326***	0.281**	0.161**	0.155**	-0.188	-0.137
	(0.122)	(0.123)	(0.077)	(0.079)	(0.121)	(0.127)
Wife's working (2)	-	-	-	-	-0.178**	-0.174*
					(0.086)	(0.094)
Interaction term(1*2)	-	-	-	-	0.254**	0.218*
					(0.128)	(0.132)
Household income(log)	-	-	-	-	-	0.197***
						(0.057)
Age(W)	-	0.031*	-	0.024**	-	-0.018
		(0.018)		(0.012)		(0.014)
College degree or higher(W)	-	0.052	-	-0.058	-	0.237**
		(0.128)		(0.083)		(0.107)
Age(H)	-	-0.009	-	0.004	-	0.010
		(0.016)		(0.011)		(0.013)
College degree or higher(H)	-	-0.134	-	-0.122	-	0.222**
		(0.134)		(0.087)		(0.108)
Income(log)(H)	-	0.011	-	0.026	-	-
		(0.027)		(0.020)		
Presence of a child aged 0-6	-	-	-	-	-	-0.053
						(0.103)
Number of children	-	-0.133**	-	-0.057	-	0.034
		(0.055)		(0.039)		(0.048)
Mother-in-law's education						
High school	-	-0.034	-	0.009	-	0.302**
		(0.174)		(0.107)		(0.126)
College or higher	-	-0.015	-	0.047	-	0.213
		(0.217)		(0.139)		(0.196)
Father-in-law's education						
High school	-	-0.046	-	-0.099	-	-0.054
		(0.170)		(0.098)		(0.122)
College or higher	-	0.003	-	-0.133	-	0.145
		(0.205)		(0.129)		(0.166)
Constant	-	-	-	-	6.133***	5.070***
					(0.084)	(0.538)
City size	-	YES	-	YES	-	YES
Prefecture(H)	-	YES	-	YES	-	YES
Year	YES	YES	YES	YES	YES	YES
N	1913	1591	3700	3201	6249	5256

Notes: Marginal effects of probit model are reported. Standard deviation in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. H and W refer to husband and wife, respectively. Reference level of parents-in-law's education is junior high school.

Table 7: Estimation results of endowment mechanism

	Husband				Wife			
	Housework time		Childcare		Housework time		Childcare	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother-in-law's working	-0.088	-0.244	1.038**	-0.114	-1.040	-1.168	1.396	-1.124
	(0.182)	(0.186)	(0.529)	(0.530)	(0.761)	(0.804)	(2.644)	(2.293)
Age(W)		-0.092**		-0.359***		0.089		-2.609***
		(0.036)		(0.077)		(0.146)		(0.336)
College degree or higher(W)		0.529**		0.952*		-1.049		5.888**
		(0.225)		(0.540)		(0.880)		(2.426)
Age(H)		0.055*		-0.048		-0.188		-1.083***
		(0.033)		(0.062)		(0.125)		(0.312)
College degree or higher(H)		0.412*		-0.109		-0.724		3.777
		(0.217)		(0.624)		(0.868)		(2.583)
Income(log)(H)		-0.325***		-0.573		0.235		0.256
		(0.093)		(0.427)		(0.191)		(0.864)
Presence of a child aged 0-6		0.124				3.576***		
		(0.321)				(0.991)		
Number of children		-0.061		-0.146		2.465***		8.693***
		(0.086)		(0.451)		(0.369)		(1.641)
Mother-in-law's education								
High school		-0.689***		-0.044		-1.417		-1.164
		(0.263)		(0.705)		(0.994)		(3.089)
College or higher		-0.032		0.692		-0.229		3.499
		(0.399)		(1.073)		(1.474)		(3.916)
Father-in-law's education								
High school		0.134		0.020		1.257		1.507
		(0.262)		(0.658)		(0.951)		(2.948)
College or higher		0.330		-0.245		1.069		0.579
		(0.343)		(0.866)		(1.324)		(3.466)
Constant	2.079***	5.604***	7.723***	26.510***	27.877***	28.359***	60.656***	178.221***
	(0.163)	(1.072)	(0.587)	(3.672)	(0.594)	(3.645)	(2.151)	(11.230)
City size	-	YES	-	YES	-	YES	-	YES
Prefecture(H)	-	YES	-	YES	-	YES	-	YES
Year	YES	YES	YES	YES	YES	YES	YES	YES
N	6163	5401	3016	2627	6232	5451	2849	2493

Notes: Coefficients of linear random effect models are listed. Standard deviation in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. H and W refer to husband and wife, respectively. Reference level of parents-in-law's education is junior high school.

6. CONCLUSION

In this study, the intergenerational tranmission of employment in Japan is analyzed using panel data from Japan Household Panel Survey (JHPS) taken between 2009 and 2016. In random effect probit models, the positive and significant effect of mother-in-law's former employment on wife's employment is found, even after controlling socioeconomic characteristics of husband and wife as well as parents-in-law. Its effect is 14% on average; that is, husbands are influenced by a working mother. Wife's working hours are also used to investigate whether the husband grown up in the house where mother worked has an impact on time wife spends outside of house. In linear random effect models, it is found that wife with a working mother-in-law spends 2 hours more at work.

Regarding the preference mechanism, using the same data source, how husband with a working mother approaches to have a working wife with a little child is examined. The positive and significant impact of mother-in-law's employment on wife's labor supply with a child aged 0-6 and 0-12 reinforces the operation behind the preference mechanism. In

other words, being raised by a working mother affects wife's employment with a little child through making her son less traditional. In addition, the determinants of husband's life satisfaction is investigated to understand the feeling of husband to have a working wife. Even though the result shows that a working wife decreases her husband's life satisfaction, a working wife makes husband grown up with a working mother pleasant. Accordingly, these results point out that the preference mechanism is effective in Japan, and men with egalitarian view lead to increase labor supply of married women.

This study also attempts to test the endowment channel to understand whether husband with a working mother is better partner. The findings related to time allocation of couples in the house show that having a working mother does not affect time husband spends on housework or childcare. Furthermore, housework and childcare time of wife with a working mother-in-law is not affected. After all, the behaviors of husband and wife about doing household chores or childcare does not depend on a working mother.

Overall, this study confirms the importance of one generation's employment for the next generation's employment, particularly from mother-in-law to daughter-in-law. Change in a figure of woman in a household leads children' attitudes to alter, and thus marriage preference in future is affected by their parents. However, having a working mother is not enough to boost man' skills to cooperate in the house. In other words, Japanese women' dual roles have not been affected by being married with a husband raised by a working mother.

Appendix

<p style="text-align:center">Table 8: Definitions of variables</p>

Variable name	Definition
Wife's working	Wife is self-employed, professional, wage worker=1
	Wife is a family worker, worker at home, consigned worker, or unemployed=0
Hours wife worked	Hours of paid work (including overtime) she performed weekly are used.
Time wife spends on housework	Time wife spends on preparing meals, laundry, grocery shopping, cleaning per week is used.
Time husband spends on housework	Time husband spends on preparing meals, laundry, grocery shopping, cleaning per week is used.
Time wife spends on childcare	Time wife with a child aged 0-12 spends on childcare per week is used.
Time husband spends on childcare	Time husband with a child aged 0-12 spends on childcare per week is used.
Husband's life satisfaction	Husband's overall life satisfaction with a scale of 0 referring to "completely dissatisfied" to 10 referring to "fully satisfied" is used.
Mother-in-law's working	Mother-in-law was self-employed, professional, or wage worker when her son was 15 years old=1
	Mother-in-law was family worker, worker at home, consigned worker, or unemployed when her son was 15 years old=0
Mother's working	Mother was self-employed, professional, or wage worker when her daughter was 15 years old=1
	Mother was family worker, worker at home, consigned worker, or unemployed when her daughter was 15 years old=0
Wife's age	Wife whose age is between 25 and 60 is used.
Education level of wife	Wife has less than or equal to a high school degree, or other degree=0
	Wife has a college degree or higher=1
Husband's age	Husband's age is used.
Educational level of husband	Husband has less than or equal to a high school degree, or other degree=0
	Husband has a college degree or higher=1
Husband's income	Annual income of husband earned from employment or working at home last year.
Husband's income(log)	A natural logarithm of husband's income is used.
Having a child aged 0-6	Wife has a child older than 6, or no child=0
	Wife has a child aged 0-6=1
Number of children	Number of children that wife has is used.
Household income	Household income before tax is used.
Household income (log)	A natural logarithm of household income before tax is used.
Mother-in-law's education	Mother-in-law has a junior high school degree, or other degree=1
	Mother-in-law has a high school degree=2
	Mother-in-law has a degree from college or higher level=3
Father-in-law's education	Father-in-law has a junior high school degree, or other degree=1
	Father-in-law has a high school degree=2
	Father-in-law has a degree from college or higher level=3
Mother's education	Mother has a junior high school degree, or other degree=1
	Mother has a high school degree=2
	Mother has a degree from college or higher level=3
Father's education	Father has a junior high school degree, or other degree=1
	Father has a high school degree=2
	Father has a degree from college or higher level=3
Prefecture husband lived in	The prefecture husband lived in when he was 15 years old is used.
Prefecture wife lived in	The prefecture wife lived in when she was 15 years old is used.
The size of city	Wife lives in one of 14 large cities=1
	Wife lives in other cities=2
	Wife lives in towns or villages=3

References

Abe, Y. (2011). The Equal Employment Opportunity Law and labor force behavior of women in Japan. *Journal of the Japanese and International Economies*, 25(1):39–55.

Bütikofer, A. (2013). Revisiting 'mothers and sons' preference formation and the female labor force in Switzerland. *Labour Economics*, 20:82–91.

Campos-Vazquez, R. M. and Velez-Grajales, R. (2014). Female labour supply and intergenerational preference formation: Evidence for Mexico. *Oxford Development Studies*, 42(4):553–569.

Del Boca, D., Locatelli, M., and Pasqua, S. (2000). Employment decisions of married women: Evidence and explanations. *Labour*, 14(1):35–52.

Edwards, L. N. (1988). Equal employment opportunity in japan: a view from the West. *Ilr Review*, 41(2):240–250.

Edwards, L. N. and Pasquale, M. K. (2003). Women's higher education in Japan: Family background, economic factors, and the Equal Employment Opportunity Law. *Journal of the Japanese and International Economies*, 17(1):1–32.

Farre, L. and Vella, F. (2013). The intergenerational transmission of gender role attitudes and its implications for female labour force participation. *Economica*, 80(318):219–247.

Fernández, R., Fogli, A., and Olivetti, C. (2004). Mothers and sons: Preference formation and female labor force dynamics. *The Quarterly Journal of Economics*, 119(4):1249–1299.

Johnston, D. W., Schurer, S., and Shields, M. A. (2013). Maternal gender role attitudes, human capital investment, and labour supply of sons and daughters. *Oxford Economic Papers*, 66(3):631–659.

Kawaguchi, D. and Miyazaki, J. (2009). Working mothers and sons' preferences regarding female labor supply: Direct evidence from stated preferences. *Journal of Population Economics*, 22(1):115–130.

Li, Z. and Liu, L. (2018). Preference or endowment? Intergenerational transmission of women's work behavior and the underlying mechanisms. *Journal of Population Economics*, pages 1–35.

Morrill, M. S. and Morrill, T. (2013). Intergenerational links in female labor force participation. *Labour Economics*, 20:38–47.

Nishioka, H., Yamauchi, M., Koyama, Y., Chitose, Y., Kamano, S., Suga, K., and Hoshi, A. (2012). The family changes in contemporary Japan: Overview of the results of the Fourth National Survey on Family in Japan (2008). *Japanese Journal of Population*, 10(1):1–31.

Oishi, A. S. (2019). Why did Japanese dual-earner couples increase since the late 1980s? *Japan Labor Issues*, 3(13):15–29.

Papapetrou, E. and Tsalaporta, P. (2018). Is there a case for intergenerational transmission of female labour force participation and educational attainment? Evidence from Greece during the crisis. *Labour*, 32(4):237–258.

Retherford, R. D. and Ogawa, N. (2005). Japan's baby bust: Causes, implications, and policy responses'. Technical Report 118, East-West Center Working Papers, Population and Health Series.

Tanaka, R. (2008). The gender-asymmetric effect of working mothers on children's education: Evidence from Japan. *Journal of the Japanese and International Economies*, 22(4):586–604.

Tolciu, A. and Zierahn, U. (2012). Women and work: What role do social norms play? *International Review of Applied Economics*, 26(6):711–733.

Ueda, A. (2005). Intrafamily time allocation of housework: Evidence from Japan. *Journal of the Japanese and International Economies*, 19(1):1–23.

Yamaguchi, M. (1992). Is Japan a nation of mamas' boys? `www.apnews.com/25387cc9309b28fedbc63b628f38d12f`.