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# **Effects of sex preference and social pressure on fertility in changing Japanese families**

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# Effects of sex preference and social pressure on fertility in changing Japanese families

**Abstract.** This study explored how social pressure related to parental preference for the sex of their children affects fertility. Pre-war and post-war generations were compared using individual level data previously collected in Japan in 2002. In the pre-war generation, if the first child was a daughter, the total number of children tended to increase regardless of the mother's sex preference. This tendency was not observed for the post-war generation. Results suggest that social pressure related to giving birth to a son led to high fertility in the pre-war generation; however, fertility was not influenced by social pressure in the post-war generation.

**Keywords:** Fertility, son preference, social pressure, family structure.

**JEL classification:** J12, J13, J16

## 1. Introduction

It is widely acknowledged that parental preferences for the sex of their children exist (e.g., Ben-Porath and Welch, 1976, 1980; Behrman, 1988; Behrman et al., 1986; Leung, 1988). This topic has triggered a significant amount of research regarding the underlying reasons for these preferences and effects on family structure (e.g., Arnold and Zhaoxiang, 1986; Dahl and Moretti, 2008; Das, 1987; Leung, 1991, 1994; Lundberg, 2005). The relationship between son preference and fertility is considered to be among the major issues. From the viewpoint of traditional economics, fertility is dependent on the female's decision (e.g., Becker, 1965; Cigno, 1991; Galor and Weil, 1996). For example, due to a substitution effect, an increase in female wages results in an increase in female labor supply and a reduction in demand for children (Becker, 1965). Within the framework of traditional theory, Ahn and Mira (2002) have posited that income effect prevails over substitution effect in the process of economic growth. If this is true, considering the stage of economic development is important when investigating fertility.

In the field of economics, researchers have focused not only on individual decision making but also on the attitudes of others when analyzing human behavior (Becker and Murphy, 2000). In pre-war Japan, family members were expected to subordinate their individual interests to those of the family as a whole (Hendry, 1981). "Women were taught from an early age that their prime duty should be obedience: first to their father, then to their husband and husband's parents, and finally when widowed, to their son" (Hendry, 1981, p. 21). If a female did not obey the males in a family, she would be informally sanctioned by family members. This was an informal rule within a family and thus the social norm. More broadly stated, if members of a tightly knit group went against the social norm formed through long term interpersonal relationships, they suffered social ostracism<sup>1</sup>. The cost of social ostracism was significant in the family or community, which were both characterized by continuous and intensive personal interaction (Hayami, 2001). In this paper, this cost is regarded as the degree of social pressure. Social pressure depends to a great extent on the sociocultural and anthropological background of society. Hence, fertility is influenced not only by individual preference but also by

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<sup>1</sup> The social norm remains, to a certain extent, in effect in Japan, although formal rule plays an important role (Yamamura, 2008a, 2008b).

social pressure, which varies according to the sociocultural condition<sup>2</sup>.

Sociocultural conditions play a critical role in determining economic behavior, but the importance of this role has gradually decreased over time as an outcome of economic development (e.g., Greif, 1994, 2002; Hayami, 1998). Social pressure seems to lessen as a result of the diffusion of market-based transactions. If this is the case, economic development decreases the social pressure effect on fertility. However, this dynamic process involving the social pressure effect on fertility has not been sufficiently investigated in existing research. It is widely acknowledged that Japan has experienced rapid economic growth during the post-World War II years. Income level, family structure, and inter-personal relations within communities in Japan have changed significantly in this period (Hendry, 1981). Therefore, it is appropriate to explore changes in income and social pressure as related to fertility in modern Japan. This study used individual level data to examine how not only a mother's preference but also social pressure have an influence fertility, after controlling for a mother's job status and education<sup>3</sup>. Furthermore, changes in these effects were explored by comparing pre-war and post-war generations.

The remainder of this paper is organized as follows. Section 2 explains the data and methods used. Section 3 discusses the results of the estimations. The final section offers concluding observations.

## 2. Methods

### 3.1. Data

This paper used individual level data including information such as age, years of education, marital status, and number of children<sup>4</sup>. In addition, age and spouses'

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<sup>2</sup> Individual preference appears to be affected by family members' characteristics. Kawaguchi and Miyazaki (2009) found that men raised by full-time working mothers were less likely to have working wives.

<sup>3</sup> The social position and role of women have also changed remarkably in this period. In this regard, Spain is similar to Japan. For example, Gutierrez-Domenech (2008) has focused on the labor market when exploring marriage and fertility.

<sup>4</sup> Data for this secondary analysis is from the National Survey: "Trails of Families in Post-War Japan." This data was designed by the Japan Society of Family Sociology. The research was subcontracted to Shin Joho Center Inc. and carried out in 2002. Data was provided by the Social Science Japan Data Archive, Information Center for Social

years of education were included. This data was compiled from the National Survey: “Trails of Families in Post-War Japan” (TFPWJ hereafter) conducted in all parts of Japan in 2002. Five thousand adult females (born between 1920 and 1969, aged 32 to 81 years) were invited to participate in a survey with stratified two-stage random sampling. The survey collected data on 3475 adults, with a response rate of 69.5%.

<Insert Table 1 here>

The construction of samples used in this research is shown in Table 1. The original sample contained 3475 observations. Among these observations, 3351 had experienced marriage. The sample size became 3189 when limited to those who had offspring. In addition, I omitted the observations without valid answers for respondents’ and spouses’ characteristics, so the sample size became 3002. This sample was used for estimation, and results are reported in Tables 3 and 5.

Unprecedented economic growth started after World War II, hence, economic conditions such as income level were different between the two generations. Furthermore, according to Hendry (1981), the greatest single factor to have influenced the Japanese way of life was defeat in World War II, with the introduction of democracy and other Western ideals into the legal and educational systems. These drastic changes are thought to have had an impact on determinants of fertility. Thus, observations were divided into pre-war generation (husband born before World War II) and post-war generation (husband born after World War II), 1522 and 1480 observations, respectively<sup>5</sup>. Divided observations were used for the regression estimation, and results are shown in Tables 4 and 5.

Comparisons of variables used for estimation between pre-war and post-war generations are shown in Table 2. The dependent variable was the total number of children. Total number of children for the post-war generation was smaller than for the pre-war generation, reflecting a birth rate decline. Independent variables are also shown in Table 2. To measure preference for a son I used the following question: “For your first child, which did you want to have, a boy or girl?” Respondents could

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<sup>5</sup> The family head, ordinarily the husband, played an important role in household decision making in the pre-war period. The role of the husband changed, and his influence declined in the post-war period. It is important to consider such changes in environment when birth of children is considered. Hence, pre-war and post-war generations were divided based on the husband’s birth year.

choose from a numbered list, which included “boy,” “girl,” “either,” and “I didn’t want a child.” *Preference for a son* was coded 1 if the respondent chose “boy,” or 0 otherwise. Concerning preference for a son, I found it interesting that the percentage of respondents in the pre-war generation (30.6%) was about 1.5 times higher than in the post-war generation (19.7%). According to Dahl and Moretti (2008), a first-born son is more likely to be living with a father compared to a first-born daughter, leading fathers to prefer sons. Thus, the likelihood of living with a mother is thought to be associated with the mother’s preference.

<Insert Figure 1 here>

Figure 1(a) reveals that the number of married children living with their mothers in the post-war generation was lower than in the pre-war generation. Figure 1(b) indicates that the eldest son was more likely than other children in the family to live with his mother, but this tendency was less in the post-war generation. The decline of the likelihood that the eldest son lived with his mother was consistent with the decline of preference for a son.

The key variable of sex of the first child was coded 1 if the first child was male; otherwise, it was 0. To control for the probability of pregnancy, respondents’ and spouses’ ages at marriage as well as dummy variables for divorce and husband’s death were included. Economic condition of the household was indicated by dummy variables for a husband’s having experienced bankruptcy or job loss, first professional job occupation<sup>6</sup>, and husband’s job<sup>7</sup>. Years of education for wives and husbands were incorporated to capture the human capital effect.

<Insert Table 2 here>

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<sup>6</sup> In the questionnaire, professional occupation was defined as a job that requires highly specialized knowledge, such as doctor, lawyer, researcher, engineer/technical expert, reporter, writer, artist, teacher, nurse, pharmacist, child caretaker, and social worker.

<sup>7</sup> The husband’s job was considered the professional occupation. Therefore, for the purpose of constructing husband’s job dummies, I used the question “Which of the following describes your spouse’s occupation when you married him?” Respondents chose from among a list, which included “regular employee of a large corporation (500 or more employees),” “regular employee of a small/medium corporation (less than 500 employees),” “self-employed in agriculture,” “self-employed in areas other than agriculture,” “non-regular employee,” “He did not have a job.” Husband’s job dummies were included when estimations were conducted but not reported in Tables 3, 4, or 5.

As seen in Table 2, respondents' average age at marriage in the post-war-generation was higher than in the pre-war generation, whereas the age of husbands hardly changed. This suggests that female work opportunities increased in the post-war period, resulting in marriage postponement. The divorce rate was approximately 3% for both the pre-war and post-war generations, considered to be low. Death rate for husbands in the pre-war generation was 16.3%, distinctly higher than the 1.4% for the post-war generation. This finding might reflect that husbands born in the pre-war period were older than age 57 in 2002 when the survey was conducted; therefore, likelihood of death was higher than in the younger generation. Regarding bankruptcy or job loss, there was little difference between the pre-war generation (16.0%) and post-war generation (14.4%). I found it interesting that the percentage of professional occupations in the post-war generation was approximately two times higher than in the pre-war generation, 20.3% and 11.2%, respectively. This suggests that post-war generation females were more likely than pre-war generation females to enter the labor market as specialists. Data on average years of education revealed that post war generation females were more educated than pre-war generation females. Thus, the increase of specialists among females was due to the fact that females obtained highly specialized knowledge through education.

### 3.2. Analyses

I examined the relationship between the social pressure of preference for the birth of a son with fertility. After controlling for mother's preference, I focused on the effect of the sex of the first child on total number of children. The estimated function takes the following form:

$$\begin{aligned} \text{Total number of children}_{im} = & \alpha_0 + \alpha_1 (\text{preference for a son})_{im} + \alpha_2 (\text{first male})_{im} + \\ & \alpha_3 (\text{age at marriage})_{im} + \alpha_4 (\text{husband's age at marriage})_{im} + \alpha_5 (\text{divorce})_{im} + \alpha_6 \\ & (\text{husband's death})_{im} + \alpha_7 (\text{bankruptcy})_{im} + \alpha_8 (\text{professional})_{im} + \alpha_9 \\ & (\text{education})_{im} + \alpha_{10} (\text{husband's education})_{im} + e_m + u_{im} \end{aligned}$$

where  $\text{Total number of children}_{im}$  represents the dependent variable for individual  $i$  and spouse  $m$ ,  $\alpha$ 's represents regression parameters,  $e_m$  captures spouse's job, represented by dummy variables, and  $u_{im}$  represents the error term.

I conducted an ordinary least squares (OLS) estimation using all samples and then performed a two-stage least squares (2SLS) estimation, given that preference for a son was regarded as an endogenous variable. I incorporated *Preference for a son*, coded 1 if the mother preferred a son, otherwise coded 0, to control for mother's preference. Samples were divided into pre-war and post-war generations; the OLS and 2SLS estimations were then conducted to compare social pressure effects between them. The key variable was *First male*, given a value of 1 if the first child was male, otherwise it was 0. Even after controlling for mother's preference, birth of a daughter resulted in an increase of children if social pressure for birth of a son existed. The negative sign for *First male*, or birth of a son, implies that social pressure leads to a reduced number of children; that is, social pressure's effect was indicated by the sign for *First male*.

For a robustness check of estimation results, the sample was divided into two groups according to mother's preference for a son, then the OLS estimation was conducted. Regarding preference for a son, the expected sign for *First male* was negative mainly due to mother's preference. With respect to the other group, the negative sign for *First male* implies that social pressure leads to fewer children by birth of a son since the mother did not prefer a son.

### 3.3. Instrumental variable

Mother's preference can be correlated with the error term, resulting in endogenous estimation bias. To control for this bias, a 2SLS estimation was employed using the instrumental variable. "Before the war, the law stipulated that all household property and authority should pass to the eldest son, but post-war legislation gives all sons and daughters equal right to inherit." (Hendry 1981, p.97). Thus, the eldest son received special treatment in the pre-war period. As stated by Hendry (1981), the family head, who ordinarily the eldest son became, had a critical effect on family members' decision making<sup>8</sup>. Therefore, it seemed appropriate that the wife of the eldest son was more likely to hope to have a son. This tendency was seen more in the pre-war generation than in the post-war generation. The value of

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<sup>8</sup> For instance, regarding marriage, the family head's wishes had a critical effect on a family member's marriage although the head could not veto a marriage choice. "If a member married against the head's wishes, the head could remove him or her from the family registry" (Ramseyer, 1996, p.108).



the dummy variable was 1 if the husband was an eldest son, and was correlated with mother's preference but not with the error term. Therefore this dummy was exogenous and used as the instrumental variable for the 2SLS estimation. The coefficient of this variable showed an expected positive sign in the first stage estimation where *Preference for a son* was the dependent variable.

### 3. Results

Estimation results using all samples are reported in Table 3. Results of pre-war and post-war generations are exhibited in Tables 4 and 5.

I will discuss results of Table 3 and focus on results of *First male*, shown in the second row. Signs for *First male* were negative in all estimations. As shown in column (1), results were not statistically significant when *Preference for a son* was not incorporated. Column (2) reveals, however, that after controlling for *Preference for a son*, results became statistically significant. Furthermore, results of the 2SLS estimation in column (3) reveal that the absolute value of *First male* became remarkably larger. The first stage of the 2SLS shows that the dummy variable of the husband being the eldest son produced a significant positive sign. This implies that a mother is more likely to prefer a son when her husband is the eldest son.

<Insert Table 3 here>

In Table 3, regarding *age at marriage* and *husband's age at marriage*, signs were negative in all estimations. In addition, the absolute value of *age at marriage* was distinctly larger than *husband's age at marriage*. It follows that the older the people were, the fewer children they had. In particular, mother's marriage age had a greater effect on fertility than father's marriage age<sup>9</sup>. *Divorce* yielded significant negative signs in all estimations. This suggests that divorce after birth of the first child reduces the likelihood that females bear children, resulting in a decline in fertility. On the other hand, *husband's death* yielded positive signs, despite being statistically insignificant. This finding suggests that most husbands had died after their wives became too old to bear children. Consequently, husband's death hardly

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<sup>9</sup> In western countries, there are many unmarried mothers, so it is important to consider them (Dahl and Moretti, 2008). In TFPWJ data, however, unmarried mothers were very rare (only 3 cases were observed), so they were omitted.

affected the number of children. Signs for *bankruptcy* were not stable, and its effect on fertility was ambiguous. It is very interesting that both *professional occupation* and *education* produced positive signs in all estimations. Typically, professional jobs and years of education are positively correlated with rise in wages. The data revealed that a rise in female wages led to increased fertility, which is contrary to fundamental theory (Becker, 1965). This is, however, consistent with the argument of Ahn and Mira (2002); at sufficiently high female wage levels, a wage increase leads to an increase in fertility as the income effect supersedes the substitution effect.

#### 4.2. Comparison between pre-war and post-war generations

Tables 4 and 5 are used to compare the determinants of fertility between pre-war and post-war generations. Table 4 shows the results of pre-war and post-war generations in columns(1)–(3) and columns(4)–(6), respectively.

<Insert Table 4 here>

*First male* indicates significant positive signs for the pre-war generation. After controlling for the endogenous bias of *Preference for a son* by the 2SLS method, the absolute value of *First male* became 1.0, which was about 7 times larger than the 0.14 estimated by the OLS method. In addition, consistent with expectation, the dummy variable of the husband being the eldest son had a significant positive sign in the first stage estimation. On the other hand, as for the post-war generation, it was surprising that *First male* yielded positive signs in columns (4) and (5). Results of the 2SLS in column (6) reveal that *First male* took on a negative sign. *First male* was, however, not statistically significant, and its absolute value of 0.14 was distinctly smaller than the 2SLS result of 1.0 for the pre-war generation. It appears that the social pressure for birth of a son existed in the pre-war generation but disappeared in the post-war generation. I interpret this finding as suggesting that interpersonal relationships within a family or between neighbors became weaker, resulting in decreased social pressure for decision making. Changes in interpersonal relationships and family structure have been reported by anthropologists (Hendry, 1981), and can be explained by social pressure from the viewpoint of economics.

Results of *divorce* yielded negative signs in all estimations. Coefficient absolute values and t-values of the pre-war generation were smaller than the post-war generation. This suggests that divorce in the post-war generation had a greater effect on fertility than in the pre-war generation. Perhaps females were more likely to postpone divorce until the birth of children more often in the pre-war than in the post-war generation. It is also interesting to observe that value signs for *professional occupation* and *education* were both negative and positive for the pre-war generation; however, they were consistently positive for the post-war generation. Absolute t-values of the post-war generation were larger than those of the pre-war generation, despite being statistically insignificant. Results of *professional occupation* and *education* were consistent with information from the Organization for Economic Co-operation and Development (OECD) during the period of 1970-1995 (Ahn and Mira, 2002). Considering results in Tables 3 and 4 regarding *professional occupation* and *education* as a whole, the argument of Ahn and Mira (2002), mentioned earlier, was supported by the data in Japan.

<Insert Table 5 here>

For the robustness check of results suggested thus far, I will discuss Table 5. With respect to the pre-war generation, as reported in columns (3) and (4), *First male* produced a significant negative sign not only for the *Preference for a son* group but also for the *Others* group. In addition, the absolute value of the *Preference for a son group* (0.32) was 4 times larger than the *Others* group (0.08). It appears that both individual preference and social pressure have an effect on fertility. Both individual preference and social pressure effects existed for the *Preference for a son* group, whereas only a social pressure effect existed for the *Others* group. Hence, for the *Preference for a son* group, *First male* effect can be divided into individual preference (75%) and social pressure (25%). Individual preference had a 3 times larger effect on fertility than social pressure. With respect to results of the post-war generation, for the *Preference for a son* group in column (5), *First male* produced a negative sign, despite being statistically insignificant. Further, its absolute value (0.14) was distinctly smaller than that of the pre-war generation (0.32). On the other hand, for the *Others* group, *First male* produced a positive sign. Hence, the individual preference effect remarkably decreased and the social pressure effect

disappeared. Results of *First male* in Table 5 are consistent with Table 4.

Coefficients of *divorce* produced negative signs in all estimations. It is surprising that they were not statistically significant for the *Preference for a son* group, whereas they were statistically significant at the 1 % level for the *Others* group. In addition, their absolute values for the *Preference for a son* group were remarkably smaller than for the *Others* group. In my interpretation, mothers who prefer a son are more likely to postpone divorce than others with the aim of bearing a son<sup>10</sup>. As is presented in Figure 1(c), the eldest son tends to live with his mother even if his mother has divorced. There is the likelihood that a son living with a divorced mother reflects the mother's divorce strategy<sup>11</sup>. That is, in the case where a female prefers a son, she may maintain a relationship with her husband so she can bear a son and live with him in the future, even if the couple would like to divorce.

Considering the statistical analysis based on the individual data as a whole, and even after controlling for mother's preference, the social pressure of bearing a son affected fertility in the pre-war generation, but hardly influenced it in the post-war generation. This is probably due to the change in interpersonal relationships as a result of economic development in Japan.

#### 4. Conclusion

As discussed in existing literature, the decision to have a child is made by parents and is an individual issue. Anthropological works suggest, however, that close relationships with family and neighbors are associated with the various facets of individual decision making. Hence, fertility appears to be influenced by social pressure. On the other hand, social pressure within a tightly knit society based on long-term intensive personal interaction seems to lessen due to the diffusion of market based transaction and economic growth. If this is the case, the role played by social pressure changes over time in the long-term economic development process. Little is known, however, about the dynamic process of the effect of social pressure on fertility. This paper explored this process in the post-World War II period of

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<sup>10</sup> Although unmarried mothers were not included in the sample used for estimations, it should be noted that divorced mothers might have re-married and then borne children. Hence, some caution should be used in interpreting results.

<sup>11</sup> Dahl and Moretti (2008) have argued that the sex of children and probability of living without a father are related to decisions regarding marriage and divorce.

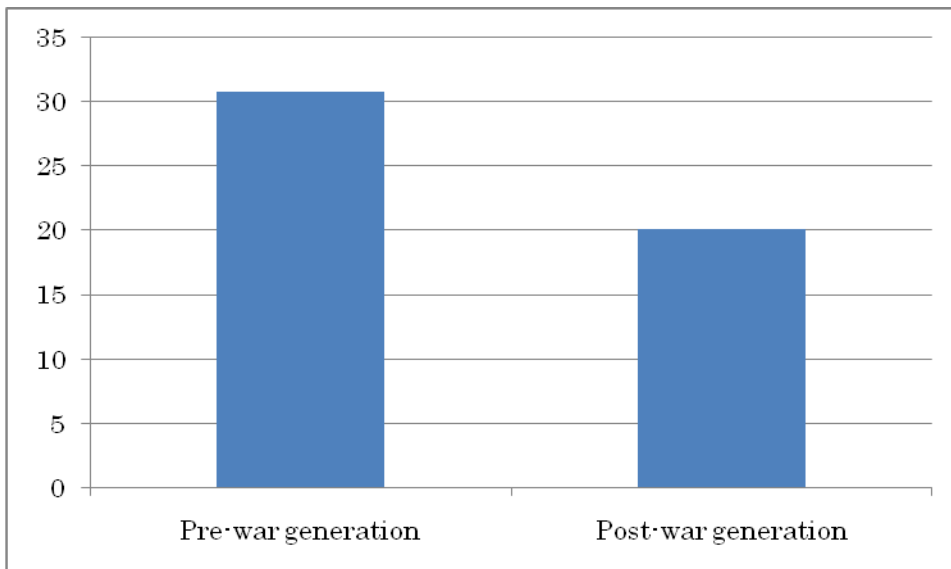
Japan by using individual level data. The major finding was as follows: If the first child was a daughter, even after controlling for mother's individual sex preference, the number of children tended to increase. This was observed in the pre-war generation but not in the post-war generation. Social pressure makes an impact on fertility. However, social pressure has decreased as a consequence of economic development.

Compared to the existing literature, the main innovation of this paper involves understanding how not only individual sex preference but also social pressure are related to fertility in the process of economic development. This paper, however, does not define social pressure. That is, social pressure might come from a spouse, other members of the family, a relative, or neighbors. In order to clarify how social pressure is generated and how it affects fertility, a definition of social pressure is needed. The present research focused on the relationship between sex of the first child and total number of children. For a closer examination, it is required to examine the transition probability of having  $n+1$  children, given  $n$  children and their sex at least. These are the remaining issues to be addressed in future studies.

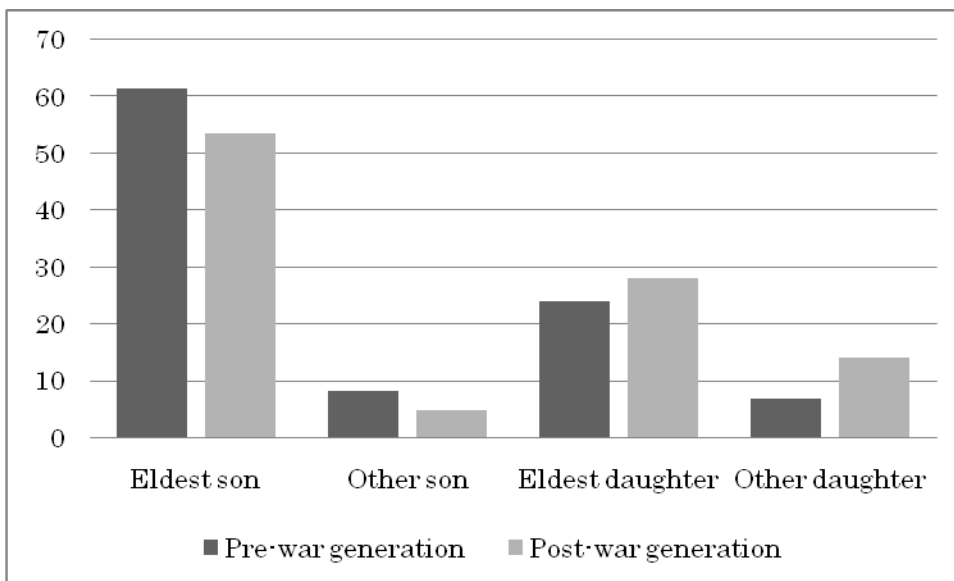
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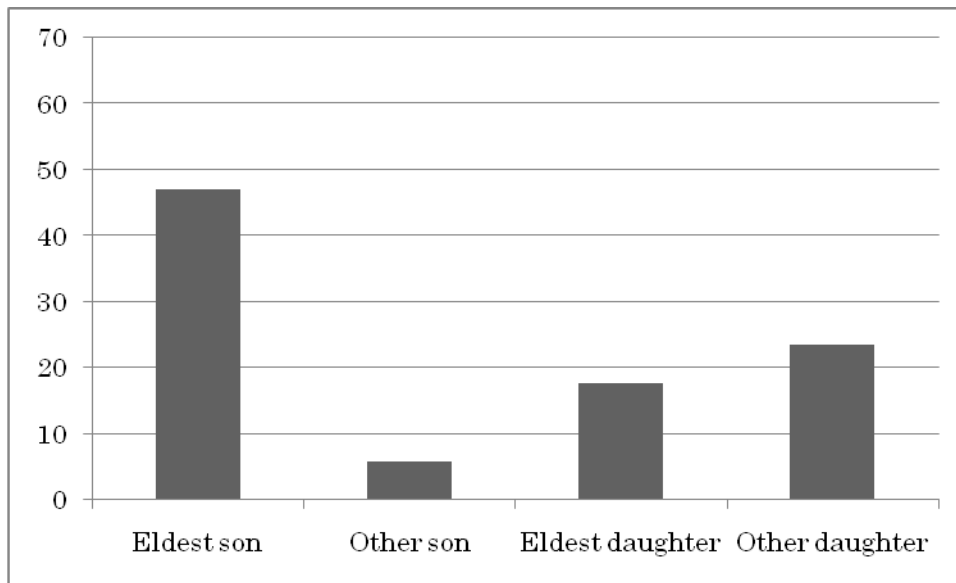


(a) Percentages of married children living with their mothers



(b) Percentage of married children living with their mothers by gender





(c) Percentage of married children living with divorced mothers by gender

Fig.1 The probability of married children living with their mothers.

*Note.* Panel (b) shows the composition of Panel (a).

Table 1. Construction of Research Sample

Description	Number in Sample
Original Sample	3475
Respondent has experienced marriage <sup>a</sup>	3351
Respondent has offspring	3189
Characteristics about self and spouse supplied by respondent (variables appear in Table 2)	3002 (I) <sup>b</sup>
Pre-war generation	1522 (II) <sup>c</sup>
Post-war generation	1480 (II) <sup>c</sup>

*Note.*

a. The 3 samples for unmarried mothers were omitted.

b. (I) Sample was used for estimations reported in Tables 3 and 5.

c. (II) Samples were used in Tables 4 and 5.

Table 2. Comparison of Variables Between Pre-war and Post-war Generations

Variables	Pre-war	Post-war
Total number of children	2.4	2.2
Preference for a son (%)	30.6	19.7
First child was male (%)	52.0	50.2
Average age at marriage	24.4	25.7
Average age of husband at marriage	28.1	28.0
Experienced divorce after birth of first child (%)	2.5	3.1
Experienced husband's death after birth of first child (%)	16.3	1.4
Husband experienced bankruptcy or job loss during marriage (%)	16.0	14.4
First job was professional occupation <sup>a</sup> (%)	11.2	20.3
Average years of education	11.0	12.6
Husband's average years of education	11.5	13.2
Husband is the eldest son (%)	39.9	48.5

*Note.*

a. In the questionnaire, professional occupation was defined as a job that requires highly specialized knowledge, for example, doctor, lawyer, researcher, engineer/technical expert, reporter, writer, artist, teacher, nurse, pharmacist, child caretaker, or social worker.

Table 3. Estimation Results Using All Samples

Variables	(1) OLS	(2) OLS	(3) 2SLS
Preference for a son (Yes = 1): dummy		0.10** (2.81)	2.29 (1.59)
First child was male (Yes = 1): dummy	-0.02 (-0.95)	-0.05* (-1.81)	-0.69* (-1.64)
Age at marriage	-0.03** (-4.72)	-0.03** (-4.58)	-0.01 (-0.62)
Age of husband at marriage	-0.006 (-0.99)	-0.006 (-1.08)	-0.01 (-1.62)
Experienced divorce after birth of first child (Yes = 1): dummy	-0.29** (-3.15)	-0.29** (-3.18)	-0.34** (-2.55)
Experienced husband's death after birth of first child (Yes = 1): dummy	0.08 (1.29)	0.08 (1.27)	0.04 (0.47)
Husband experienced bankruptcy or job loss during marriage (Yes = 1): dummy	0.04 (0.95)	0.03 (0.88)	-0.01 (-0.23)
First job was a professional occupation (Yes = 1): dummy	0.07* (1.89)	0.07* (1.82)	0.005 (0.07)
Years of education	0.004 (0.42)	0.004 (0.48)	0.01 (0.99)
Husband's years of education	-0.01** (2.38)	-0.01* (2.27)	0.0007 (0.04)
Obs	3002	3002	3002
Adj R-square	0.07	0.07	
First Stage estimation			
Husband is the eldest son: dummy			0.03* (2.00)
F-statistics			26.2

*Note.* Values in parentheses are t-statistics calculated by robust standard errors. \* and \*\* denote significance at the 5% and 1% levels, respectively. In all estimations, the constant and husband's job dummies are included, but not reported. In the first stage of 2SLS estimation, constant and all variables used in the second stage are included, but not reported.

Table 4. Comparison of Fertility Determinants in Pre-War and Post-War Generations

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	2SLS	OLS	OLS	2SLS
	Pre-war generation			Post-war generation		
Preference for a son (Yes = 1): dummy		0.10*	2.62		0.10*	0.81
		(1.94)	(1.62)		(2.07)	(0.69)
First child was male (Yes = 1): dummy	-0.10**	-0.14**	-1.00*	0.05	0.03	-0.14
	(-2.44)	(-2.88)	(-1.78)	(1.50)	(0.80)	(-0.49)
Age at marriage	-0.02*	-0.02	-0.003	-0.05**	-0.05**	-0.04**
	(1.67)	(-1.61)	(-0.16)	(-7.52)	(-7.37)	(2.67)
Age of husband at marriage	-0.008	-0.009	-0.01	-0.006	-0.007	-0.01
	(-0.83)	(-0.87)	(-1.15)	(-1.02)	(-1.12)	(-1.10)
Experienced divorce after birth of first child (Yes = 1): dummy	-0.28*	-0.28*	-0.24	-0.33**	-0.33**	-0.36**
	(-1.97)	(-1.96)	(-1.06)	(-2.61)	(-2.66)	(-2.67)
Experienced husband's death after birth of first child (Yes = 1): dummy	0.08	0.08	0.09	-0.03	-0.03	-0.06
	(1.22)	(1.23)	(0.96)	(-0.19)	(-0.21)	(-0.32)
Husband experienced bankruptcy or job loss during marriage (Yes = 1): dummy	0.08	0.08	0.03	-0.008	-0.01	-0.03
	(1.21)	(1.18)	(0.32)	(-0.16)	(-0.23)	(-0.51)
First job was a professional occupation (Yes = 1): dummy	0.07	0.06	-0.12	0.06	0.06	0.05
	(1.02)	(0.92)	(-0.74)	(1.31)	(1.30)	(1.11)
Years of education	-0.004	-0.004	-0.008	0.02	0.02	0.02
	(-0.30)	(-0.31)	(-0.33)	(1.55)	(1.59)	(1.63)
Husband's years of education	-0.01	-0.01	-0.006	-0.01*	-0.01*	-0.008
	(-1.25)	(-1.22)	(-0.34)	(1.84)	(1.71)	(-0.50)
Obs	1522	1522	1522	1480	1480	1480
Adj R-square	0.06	0.06		0.09	0.09	
First Stage estimation						
Husband is the eldest son: dummy			0.04*			0.03*
			(1.96)			(1.65)
F-statistics			15.5			11.2

*Note.* Values in parentheses are t-statistics calculated by robust standard errors. \* and \*\* denote significance at the 5% and 1% levels, respectively. In all estimations, the constant and husband's job dummies are included, but not reported. In the first stage of 2SLS estimation, the constant and all variables used in the second stage are included, but not reported.

Table 5. Fertility Determinants and Preference for a Son (OLS estimation)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	All		Pre-war generation		Post-war generation	
	Preference for a son	Others	Preference for a son	Others	Preference for a son	Others
First child was male (Yes = 1): dummy	-0.26** (-3.12)	-0.004 (-0.14)	-0.32** (-2.70)	-0.08* (-1.73)	-0.14 (-1.39)	0.06 (1.59)
Age at marriage	-0.04** (3.48)	-0.03** (-3.51)	-0.04** (-2.55)	-0.01 (-0.72)	-0.05** (-3.21)	-0.05** (-7.00)
Age of husband at marriage	-0.01 (-1.19)	-0.005 (-0.68)	-0.004 (-0.29)	-0.01 (-0.82)	-0.02 (-1.58)	-0.001 (-0.26)
Experienced divorce after birth of first child (Yes = 1): dummy	-0.13 (-0.70)	-0.35** (-3.41)	-0.14 (-0.54)	-0.33* (-1.87)	-0.10 (-0.35)	-0.40** (-3.00)
Experienced husband's death after birth of first child (Yes = 1): dummy	0.23* (2.03)	0.007 (0.09)	0.28** (2.30)	-0.005 (-0.06)	-0.10 (-0.32)	-0.01 (-0.08)
Husband experienced bankruptcy or job loss during marriage (Yes = 1): dummy	0.001 (0.02)	0.05 (1.01)	-0.06 (-0.50)	0.14* (1.71)	0.06 (0.59)	-0.03 (-0.65)
First job was a professional occupation (Yes = 1): dummy	0.10 (1.21)	0.06 (1.33)	0.22* (1.69)	0.004 (0.06)	0.03 (0.33)	0.06 (1.31)
Years of education	0.02 (1.05)	-0.008 (-0.08)	0.02 (0.84)	-0.01 (-0.77)	0.005 (0.16)	0.02 (1.58)
Husband's years of education	-0.01 (-1.23)	-0.01* (-1.99)	-0.03* (-1.91)	-0.006 (-0.47)	0.008 (0.37)	-0.02* (-2.10)
Obs	813	2189	481	1041	332	1148
Adj R-square	0.09	0.07	0.11	0.05	0.08	0.10

*Note.* Values in parentheses are t-statistics calculated by robust standard errors. \* and \*\* denote significance at the 5% and 1% levels, respectively. In all estimations, the constant and husband's job dummies are included, but not reported.