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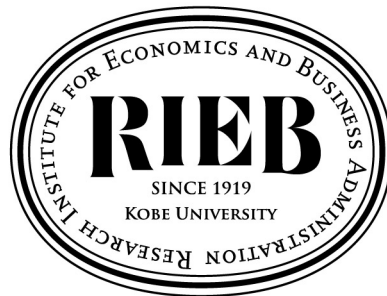
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**Preference for Childbirth Support
Measures: Results of a Stated-choice
Experiment in Japan**

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Preference for childbirth support measures: Results of a stated-choice experiment in Japan

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Abstract

The population decline associated with Japan's declining birth rate will have many effects on the Japanese economy and society. Currently, the Japanese government plans to implement a series of childbirth support measures to increase the birth rate. In this study, we conduct a stated-choice experiment using an online questionnaire survey to elicit Japanese women's preferences for childbirth support measures such as childbirth lump-sum payment, child medical expenses subsidy, common supermarket discount card issued after childbirth, childcare fee exemption, preferential housing treatment, children's education expense subsidy, and childcare leave periods for couples. Most of these measures were found to significantly affect respondents' preferences in the full-sample estimation. Meanwhile, individuals' heterogeneities in preferences for childbirth support measures were also observed using different subsamples based on respondents' age, number of children, overall education level, employment status, and annual household income.

Keywords: Childbirth support measures; Preference; Stated-choice experiment; Conditional Logit; Japan

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1. Introduction

Japan's population had been on the rise for some time following the first postwar baby boom (1947–1949) and the second baby boom (1971–1974), reaching its peak in 2008. Subsequently, a decreasing trend has been observed. The total fertility rate, which is defined as the total age-specific birth rate of women in the reproductive ages of 15-49, was 4.3 during the first baby boom. After the second baby boom, the number remained at 2.1, continued to decline gradually from 1975, and fell to an all-time low of 1.26 in 2005. It rose to 1.45 in 2015, perhaps because of improvements in the economic and employment situations between 2013 and 2014. Since then, it has continued to decline again and was 1.26 in 2022 [1].

The population decline associated with Japan's declining birth rate will have several effects on the Japanese economy and society. For example, the labor force is decreasing due to the declining birth rate. Consequently, slower or even negative economic growth will accompany a decrease in labor input. Meanwhile, as Japan is an aging society, the problem of labor shortages due to the increasing demand for welfare and medical care will become increasingly serious. In addition, as the population ages, the burden on the working generation will increase in the field of social security (e.g., pensions); consequently, their disposable income will decline. Moreover, the number of single people and households without children has also increased. Thus, the structure of the family, the basic unit of society, will change significantly.

In the literature on the economic analysis of fertility, Becker [2] theoretically showed that the desire for children is linked to parental income, the cost of rearing children, investments in the quality of children, child and adult mortality, uncertainty about the sex of children, and other variables. Browning [3] concluded in his survey paper that fertility interacts with life cycle savings, female labor supply decisions, and the costs of bringing up children. Additionally, Doepke et al. [4] argued that the economic analysis of fertility has entered a new era because two stylized facts (i.e., a negative relationship between income and fertility and a negative relationship between women's labor force participation and fertility) no longer hold universally. For example, the authors documented that in high-income countries, the income-fertility relationship has flattened and, in some cases, reversed, and the cross-country relationship between women's labor force participation and fertility is now positive. They highlighted that the new facts were possibly caused by four factors: family policy, cooperative fathers, favorable social norms, and flexible labor markets.

With respect to policies attempting to raise fertility, Calwell et al. [5] stated that many methods, such as bonus payments for births, family allowances, paid maternity and parental leave, leave to care for sick children, tax relief for parents, care facilities for young children or tax relief for childcare, flexible work arrangements for mothers and guarantees of retained promotion rights, labor force re-entry training programs, housing benefits for families with children, and educational supplements for children, have been implemented in several countries; however, the effectiveness of these policies has

been mixed. For example, Gornick et al. [6] computed index values for benefits to help working mothers with children under three years of age in 14 industrialized countries and reported that these indices are not significantly related to fertility levels.

However, Oláh [7] concluded that the introduction of paid paternal leave increased the chances of families having more than two children in Sweden. In addition, Hoem [8] stated that national fertility is possibly best seen as a systemic outcome that depends more on broader attributes, such as the degree of family friendliness in society, and less on the presence and detailed construction of monetary benefits. Other studies have highlighted the importance of family-friendly policies. For example, Castles [9] found that family-friendly policies effectively explain the positive association between fertility and women's labor force participation rates in 21 OECD countries.

In a comprehensive review of studies of policy effectiveness, Sleebos [10] concluded that “most studies seem to suggest a weak positive relation between reproductive behavior and a variety of cash benefits and tax policies. Impacts of family-friendly policies are more contradictory, with several studies suggesting strong positive effects on fertility from higher child care availability but weaker or mixed effects from maternity and parental leave.” Regarding the situation in Japan, Lee and Lee [11] addressed the problems of childcare scarcity, declining fertility rates, and work-family conflicts faced by the growing female labor force in Japan. They concluded that the pro-natal policies implemented by the Japanese government since the 1990s (e.g., childcare deregulation, childcare center expansion, and provision of childbirth grants) failed to encourage childbirth.

Currently, the Japanese government plans to implement a series of childbirth support measures called “unprecedented countermeasures for declining birthrates.” These measures are mainly divided into four categories: (i) work-life balance support and work style-related, (ii) childcare and early childhood education, (iii) expansion of child allowances, and (iv) other benefit expansion measures. Although the effectiveness in raising the birth rate in Japan cannot be tested in advance, we have attempted to investigate how Japanese women evaluate these measures.

In this study, we conducted a stated-choice experiment using an online questionnaire to elicit Japanese women's preferences for childbirth support measures proposed by the Japanese government. The choice experiment approach is a stated preference method that relies on hypothetical scenarios to elicit respondents' preferences. In each choice set of our choice experiment, we provided three alternatives for childbirth support packages and an additional alternative indicating that the respondents had no plans to have children in the future or that they did not intend to have children under any of the proposed childbirth support packages. Each support package contained seven common attributes: childbirth lump-sum payment, child medical expense subsidy, common supermarket discount card issued after childbirth, childcare fee exemption, housing preferential treatment, children's education expense subsidy, and childcare leave period for couples. Based on these attributes, we observed the respondents' preferences for different childbirth support measures.

Moreover, we conducted several subsample estimations based on the respondents' age, number of children, overall education level, employment status, and annual household income to investigate whether there were heterogeneities among their preferences. Finally, we use a Logit regression model to examine the socioeconomic characteristics of the respondents affecting their probability of always choosing either having no plans to have children in the future or not intending to have children under the proposed childbirth support packages.

The remainder of this paper is organized as follows. Section 2 describes the methodological issues, including the choice experiment design and data collection. Section 3 provides the empirical results. Finally, Section 4 presents the discussion, conclusions, and implications for future work.

2. Survey issues

2.1 Choice experiment design

In a choice experiment, individuals are typically asked to repeatedly select their preferred alternatives from choice sets presented to them. In each choice set of our survey, we provided four alternatives: Childbirth support packages A, B, C, and an additional option D described as “I have no plans to have children in the future, or I do not intend to have children under package A, B, or C.” Packages A, B, and C had seven common attributes: (i) childbirth lump sum payment, (ii) child medical expenses subsidy, (iii) common supermarket discount card issued after childbirth, (iv) childcare fee exemption, (v) housing preferential treatment, (vi) children's education expense subsidy, and (vii) childcare leave period for couples.¹ The attribute levels for each attribute are as follows:

- *Childbirth lump sum payment* (four levels): (i) 1 million JPY; (ii) 3 million JPY; (iii) 5 million JPY; and (iv) 7 million JPY.
- *Child medical expenses subsidy* (six levels): (i) Part of the medical expenses are covered by the parents until the child is 15 years old (up to 500 JPY per day per medical institution); (ii) Free until the child is 15 years old; (iii) Part of the medical expenses are covered by the parents until the child is 18 years old (up to 500 JPY per day per medical institution); (iv) Free until the child is 18 years old; (v) Part of the medical expenses are covered by the parents until the child is 22 years old (up to 500 JPY per day per medical institution); and (vi) Free until the child is 22 years old.
- *Common supermarket discount card issued after childbirth* (10 levels): (i) None; (ii) 5% discount valid for five years; (iii) 10% discount valid for five years; (iv) 15% discount valid for five years; (v) 5% discount valid for 10 years; (vi) 10% discount valid for 10 years; (vii) 15% discount valid

¹ These attributes were finally decided based on the plan of “Unprecedented countermeasures for the declining birthrate” issued by the Japanese government and the results of a pilot survey conducted at Kasari Hospital, Japan, in March 2023.

for 10 years; (viii) 5% discount valid for 15 years; (ix) 10% discount valid for 15 years; and (x) 15% discount valid for 15 years.

- *Childcare fee exemption* (three levels): (i) for all children, (ii) from the second child onwards, and (iii) from the third child onwards.
- *Housing preferential treatment* (six levels): (i) 60 thousand JPY/month for an apartment with three bedrooms, one living room, one dining room, and kitchen; (ii) 80 thousand JPY/month for an apartment with three bedrooms, one living room, one dining room, and kitchen; (iii) 100 thousand JPY/month for an apartment with three bedrooms, one living room, one dining room, and kitchen; (iv) 60 thousand JPY/month for an apartment with four bedrooms, one living room, one dining room, and kitchen; (v) 80 thousand JPY/month for an apartment with four bedrooms, one living room, one dining room, and kitchen; and (vi) 100 thousand JPY/month for an apartment with four bedrooms, one living room, one dining room, and kitchen.
- *Children's education expense subsidy* (three levels): (i) for public schools, full tuition fee exemption up to middle school, and for private schools, half tuition exemption up to middle school; (ii) for public schools, full tuition fee exemption up to high school, and for private schools, half tuition exemption up to high school; and (iii) for public schools, full tuition fee exemption up to undergraduate degree, and for private schools, half tuition exemption up to undergraduate degree.
- *Childcare leave period for couples* (five levels): (i) one year leave for both parents; (ii) two years for the mother and one for the father; (iii) three years for the mother and one for the father; (iv) two years for both parents; and (v) three years for the mother and two for the father.

To create the choice sets in our choice experiment, we adopted a D-optimal design² to investigate the main effects of the aforementioned attributes on Japanese women's preferences. Twelve choice sets were generated using Design-Expert 9.0 (Stat-Ease, Inc.). An example choice set is presented in Table 1. As shown in Table 1, based on the attribute levels listed under each childbirth support package, respondents were asked to choose the most desirable package if they did not choose option D. In contrast, they were asked to proceed to the next choice set if they chose option D.

2.2 Data collection

An online questionnaire survey was conducted by Survey Research Center Co., Ltd. at the end of May 2023 in Japan. First, an email invitation was sent to a pool of female respondents aged between 20 and 50 years. Each respondent who agreed to participate accessed the link provided by the Survey

² The objective of the D-optimal design is to extract the maximum amount of information from the respondents subject to the number of attributes and their levels. It is implemented to maximize a chosen optimality criterion based on the pre-specified model. For more details, see Alpízar et al. [12], Carlsson and Martinsson [13], and Huber and Zwerina [14].

Research Center and answered the questions. The questionnaire comprised two parts. The first part consisted of the choice experiment mentioned above, and the second part consisted of questions regarding respondents' socioeconomic characteristics, such as age, marital status, occupation status, overall education, number of children under 18 years, number of relatives, and friends living nearby, and annual household income. The average time required to complete the questionnaire was approximately 15 min. A total of 500 valid responses were obtained.

3. Results

3.1 Sample description

Table 2 reports the summary of socioeconomic characteristics in our sample. The second and third columns from left are for the full sample, while the fourth and fifth columns (resp. the sixth and seventh columns) are for the subsample of the respondents who always chose Option D (resp. the subsample of those who mostly chose one of the three childbirth support packages A, B, and C). The mean age of our respondents is 34.44 years, while it is higher for the respondents who always choose Option D (i.e., 37.48 years) than for those selecting any of the packages (i.e., 33.14 years). This difference is statistically significant at a 1% level based on a two-tailed t test. On average, all the respondents in our sample have 0.57 children. However, those who always chose Option D have fewer children than their counterparts (0.18 versus 0.73), and this difference is also statistically significant at a 1% level. With respect to the number of relatives or friends living nearby, there are no significant differences in the mean values, either between the two subsamples or between each subsample and the full sample.

In addition, approximately half of our respondents are unmarried, while the percentage of unmarried women is higher in the subsample that always chose Option D (i.e., 64.67%) than in the subsample selecting any of the packages (i.e., 45.43%). A χ^2 test supports that respondents' marital status and the subsample categorization are significantly dependent. Meanwhile, it is also statistically supported that respondents' household annual income and the subsample categorization are not independent. The percentage of individuals reporting low household annual income is higher in the subsample always choosing Option D (i.e., 44.67%) than in that selecting any of the packages (i.e., 41.71%). However, the percentage of individuals reporting middle and high household incomes are lower in the Option D subsample than in its counterparts. Finally, approximately 66.6% of the respondents are employed either full-time or part-time, and the overall education of 55% of the respondents is university or above. Results of the χ^2 test support the independence of either of these two characteristics with the subsample categorization.

3.2 Preferences for childbirth support measures

In this subsection, we report the Conditional Logit estimation results of the respondents'

preferences for childbirth support measures using the choice experiment data of respondents choosing any of the three packages. The results are presented in Tables 3-1, 3-2, 3-3, and 3-4. It should be noted that the coefficients of the Conditional Logit estimation are respondents' marginal utilities on each variable.

The second column on the left in Table 3-1 lists the results for the full sample.³ As shown in this column, most of the variables are estimated to be significant in accordance with our expectations. For example, *Lump sum payment* is estimated to be significantly positive, suggesting that respondents are more favorable for childbirth lump sum payment; furthermore, there was a more positive response for the common supermarket discount card with a longer expiration date and a larger discount rate, as the coefficients of *Supermarket discount card expiration date* and *Supermarket discount card discount rate* are significantly positive.

Meanwhile, exemption from childcare fees for all children or from the second child onwards is preferable to the exemption for the third child onwards. Regarding children's education expense subsidies, the respondents prefer full tuition fee exemptions up to an undergraduate degree or high school compared to those up to middle school. In addition, it is interesting that although respondents are more favorable for longer childcare leave periods for both themselves and their husbands, they seem to care more about the leave periods for their husbands than that for themselves because the estimated marginal utility of *Childcare leave period for husband* is 2.66 times (i.e., 0.202/0.076) that of *Childcare leave period for self*. However, two unexpected results are obtained. One is that *Medical expense subsidy until 22 year* is estimated to be significantly negative, suggesting that extending the period of medical expenses subsidy from 15 to 22 years is not preferred, and the other is that an *Apartment with four bedrooms* is also estimated to be significantly negative, implying that respondents are more willing to choose an apartment with three bedrooms.⁴

Considering the respondents' heterogeneity in their preferences for childbirth support measures, we conducted several subsample estimations based on age, number of children, overall education level, employment status, and annual household income. As shown in Tables 3-1 to 3-4, *Lump sum payment* is not always significant in the subsamples. When the respondents already had one child, the estimated coefficients in each subsample were not significant, implying that they did not seem to care about the increase in monetary payments for child support.

By contrast, respondents who do not have a child in each subsample exhibit a significantly positive preference for an increase in lump sum payments. This is plausible because respondents who do not have a child might plan to have one, whereas those who already have one might not. For respondents who already had at least two children, the effect of *Lump sum payment* on respondents'

³ The full sample here refers to the respondents who chose any of the childbirth support packages A, B, and C.

⁴ A short discussion of these two results is provided in the Discussion and conclusions section.

preferences was influenced by their age, overall education level, employment status, and annual household income. There is no significant effect of this payment for respondents who are over 36 years, whose overall education level is university or above, who are employed full-time, and whose annual household income is above 6 million JPY; however, there is a significant positive effect for those under 35 years, whose overall education level is high school or below, who are not employed full-time, and whose annual household income is less than 6 million JPY.

Regarding the medical expense subsidy measure, while *Self-pay amount for medical expenses* is insignificant in almost all the subsamples, the effects of *Medical expenses subsidy until 22 years* and *Medical expenses subsidy until 18 years* differ among the subsamples. The respondents who do not have a child in most of the subsamples prefer to extend the medical expenses subsidy until the age of 18 but not until the age of 22. However, the effects of these two variables for respondents with at least one or two children were mixed among different subsamples. In addition, for the common supermarket discount card, increasing discount rates is more favorable than extending expiration dates for respondents with different socioeconomic characteristics, because the significant positive effect of the former is estimated more often in different subsamples than the latter. With respect to childcare fee exemption, fee exemption for all children exhibits robustness and positively affects respondents' preferences based on the results that *Childcare fee exemption for all children* is estimated to be significantly positive in all the subsamples.

Concerning preferential housing treatment, *Apartment monthly rental fee* has a significant negative effect on respondents' preferences in most subsamples. The coefficients of *Apartment with four bedrooms* are estimated to be positive in several subsamples in which the respondents have only one child, although they are insignificant. In addition, when the respondents had at least one child, those aged over 36 years seemed to care more about full institutional fee exemption up to either high school or undergraduate degree, compared to those under 35 years.

Finally, in most subsamples, respondents who did not have a child preferred to extend the childcare leave period to both their husbands and themselves. However, when the respondents had at least one child, their socioeconomic characteristics exhibited different effects on this childbirth support measure to some extent. For example, the older respondents (i.e., aged over 36 years) who already have one child care about their husbands' leave period, while the younger respondents (i.e., aged under 35 years) with one child care about their own leave period; highly educated respondents (i.e., university or above) with two children do not have any preferences regarding the leave period for both of their husbands and themselves; however, their counterparts have preferences regarding the same. Moreover, extending the childcare leave period for husband does not affect the preferences of the respondents with lower household income (i.e., less than 6 million JPY), but affects those with higher household income (i.e., 6 million JPY or more).

3.3 Factors affecting the probability of always choosing Option D

In this subsection, we investigate the socioeconomic characteristics of the respondents that affect their probability of always choosing Option D (i.e., having no plans to have children in the future or not intending to have children under the presented childbirth support packages). Table 4 presents the Logit estimation results. The dependent variable is a dummy variable that equals 1 if the respondent always chooses Option D in the 12 choice set questions, and 0 otherwise. The independent variables included in Model 1 are dummy variables for respondents aged over 36 years (*Age36*), unmarried respondents (*Unmarried*), respondents with at least one child (*Child*), respondents whose overall education levels are university or above (*University or above*), and employment status (*Full-time employed* and *Part-time employed*).⁵ In Model 2, we added the interaction terms *Age36* with *Unmarried* (i.e., *Age36*Unmarried*) and *Age36* with *Child* (i.e., *Age36*Child*) to investigate the interaction effects of these characteristics.

The estimated marginal effects of each variable in Model 1 suggest that the percentages of respondents aged over 36 years or unmarried respondents who were significantly more probable to always select Option D are 22% and 8.8%, respectively, than those aged below 35 years or are married. In contrast, respondents who have at least a child or who are full-time employed are respectively, 28.9% and 8.9% less likely to always choose Option D than those who do not have a child or are not employed full-time. With respect to the interaction effect of age and marital status, *Age36*Unmarried* is estimated to be significantly negative, implying that unmarried older respondents are not likely to always choose Option D compared to unmarried younger respondents. Older respondents with at least one child are less likely to always select Option D.

4. Discussions and conclusions

The two unexpected results obtained from the Conditional Logit regression for the full sample must be discussed further. First, although extending the period of medical expense subsidy from 15 to 18 years is favored by the respondents, a further extension to 22 years is unfavorable. This might be plausible because the “Act to partially revise the Civil Code,” which lowers the legal age to 18 years, took effect on April 1, 2022, in Japan [15]. This revision probably led to a common understanding among the respondents that children above 18 are already adults; therefore, the medical expense subsidy for children should not apply to them. The second unexpected result is that respondents are more willing to choose an apartment with three bedrooms than one with four. Considering that the current household size of approximately 90% of the respondents is four or less, this result might imply

⁵ The reasons that we do not include household annual income as an independent variable are twofold. First, the number of observations would largely be reduced because approximately 30% of the respondents did not report their household annual income. Second, the household annual income is highly correlated to the respondents’ employment status. Therefore, its effect is considered to be included in the two variables of *Full-time employed* and *Part-time employed*.

that the respondents think that one extra bedroom is not useful.

Interestingly, we found that Japanese women prefer to extend their husbands' childcare leave as compared to their own. According to the Japanese Ministry of Health, Labour and Welfare [16], the rate of childcare leave was 80.2% for women and 17.13% for men in 2022. More than 90% of women took childcare leaves of six months or more, whereas approximately 50% of men took less than two weeks. Clearly, the rate and period of childcare leave for Japanese men remain low and short, respectively. Therefore, the Japanese government should continue to endeavor to improve on this matter.

Another important result worthy of special attention is that respondents prefer full tuition fee exemptions up to the undergraduate or high school level. To date, there have been some movements at the prefectural level in Japan regarding full tuition fee exemptions for undergraduate or high school degrees. For example, Tokyo Metropolitan announced an initiative to waive tuition fees at high schools and metropolitan universities from fiscal year 2024, regardless of the financial situation of parents, by eliminating the income restrictions that had existed until now. Osaka Prefecture plans to waive tuition fees at high schools and Osaka Metropolitan University without any household income limitation from fiscal year 2026. However, there are no changes in tuition fee exemption at the national and/or private university levels. According to data from the Japanese Ministry of Education, Culture, Sports, Science, and Technology, the majority of enrolled students in 2023 will enter a national or private university (15.6% for national universities and 78.8% for private universities). Therefore, Japan's central government must consider this issue at the national level.

In addition, we designed a measure to provide a common supermarket discount card issued after childbirth and found that based on our subsample estimation results, the magnitude of the discount rate affects the respondents' preferences more than the length of its expiration date. This evidence might hint to policymakers that besides direct lump-sum payment, such indirect payment support measures, which aim to reduce individuals' cost of living, could also increase their preferences.

Finally, this study has two limitations. First, Option D presented in the choice set does not make it completely clear whether the respondents who always chose this option did not have plans to have children in the future or simply were not satisfied with any packages provided to them. Therefore, our results, based on the Logit regression for investigating the socioeconomic characteristics of respondents affecting their probability of always choosing Option D, should be interpreted with caution. Second, the results are based on a hypothetical choice experiment survey; thus, there may be a potential hypothetical bias, as found by Carlsson and Martinsson [13] and Lusk and Schroeder [17] in their studies. Future studies should compare the results estimated from actual data (if available) or field experimental data with our results.

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Table 1. An example of a choice set

	Package A	Package B	Package C	Option D
Childbirth lump sum payment	5 million JPY	7 million JPY	1 million JPY	I have no plans to have children in the future, or I do not intend to have children under packages A, B, or C
Child medical expenses subsidy	Free until 15 years	Free until 18 years	Free until 15 years	
Common supermarket discount card issued after childbirth	None	5% discount valid for 5 years	None	
Childcare fee exemption	From 3 rd child onwards	Free for all children	Free for all children	
Housing preferential treatment	80 thousand JPY/month for an apartment with 3 bedrooms, 1 living room, 1 dining room, and a kitchen	60 thousand JPY/month for an apartment with 3 bedrooms, 1 living room, 1 dining room, and a kitchen	60 thousand JPY/month for an apartment with 4 bedrooms, 1 living room, 1 dining room, and a kitchen	
Children's education expense subsidy	For public schools, full tuition fee exemption up to middle school, and for private schools, half tuition exemption up to middle school	For public schools, full tuition fee exemption up to high school, and for private schools, half tuition exemption up to high school	For public schools, full tuition fee exemption up to undergraduate degree, and for private schools, half tuition exemption up to undergraduate degree	
Childcare leave period for couples	1 year for both you and your husband	2 years for you and 1 year for your husband	1 year for both you and your husband	
Please choose the most desirable package with ✓ in □	□	□	□	□

Table 2. Socioeconomic characteristics of the sample

Characteristics	Full sample		Always choosing D		Choosing packages		<i>p</i> -values ^a
	Mean	S.D.	Mean	S.D.	Mean	S.D.	
<i>Age</i>	34.44	8.05	37.48	8.49	33.14	7.49	0.000
<i>Number of children</i>	0.57	0.96	0.18	0.52	0.73	1.05	0.000
<i>Number of relatives or friends living nearby</i>	2.11	3.62	2.13	4.74	2.10	3.02	0.933
Characteristics	All		Always choosing D		Choosing packages		<i>p</i> -values ^b
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
<i>Marital status</i>							
Unmarried	256	51.20	97	64.67	159	45.43	0.000
Married	244	48.80	53	35.33	191	54.57	
<i>Occupation status</i>							
Full-time	201	40.20	51	34.00	150	42.86	0.271
Part-time	132	26.40	41	27.33	91	26.00	
Self-employed	21	4.20	5	3.33	16	4.57	
Housewife	80	16.00	27	18.00	53	15.14	
Others	66	13.20	26	17.34	40	11.43	
Did not answer	24	4.80	8	5.33	16	4.57	
<i>Overall education</i>							
Middle school	14	2.80	7	4.67	7	2.00	0.292
High school	112	22.40	36	24.00	76	21.71	
Vocational school	75	15.00	21	14.00	54	15.43	
College/University	248	49.60	74	49.33	174	49.71	
Graduate school	27	5.40	4	2.67	23	6.57	
Did not answer	24	4.80	8	5.33	16	4.57	
<i>Household annual income (JPY)</i>							
less than 6,000,000	213	42.60	67	44.67	146	41.71	0.000
6,000,000-9,999,999	91	18.20	24	16.00	67	19.14	
10,000,000 or more	47	9.40	10	6.67	37	10.57	
Do not answer	149	29.80	49	32.67	100	28.57	
Sample size	500		150		350		

Notes: ^a two-tailed *t* tests for whether the mean values are equal between the subsamples of always choosing D and Choosing packages. ^b χ^2 test for whether the categorization and the subsamples of Always choosing D and Choosing packages are independent.

Table 3-1. Conditional Logit estimates of preferences for childbirth support measures – full sample, respondents’ age, and number of children subsamples

	Full sample	Under 35 years			Over 36 years		
		No child	1 child	Over 2 children	No child	1 child	Over 2 children
<i>Package A</i>	0.793***	0.814***	1.237***	0.768**	0.920***	0.662*	0.314
<i>Package B</i>	0.299***	0.207*	0.755***	0.496**	0.188	0.052	0.354*
<i>Lump sum payment</i>	0.001***	0.001***	0.000	0.001**	0.001**	0.000	0.000
<i>Medical expenses subsidy until 22 years</i> ^a	-0.201***	-0.200**	-0.476**	-0.165	-0.338***	-0.033	0.043
<i>Medical expenses subsidy until 18 years</i> ^a	0.262***	0.267**	0.087	0.233	0.227	0.243	0.536**
<i>Self-pay amount for medical expenses</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<i>Supermarket discount card expiration date</i>	0.007***	0.007	0.006	0.023	0.014	0.001	-0.010
<i>Supermarket discount card discount rate</i>	0.025***	0.029***	0.026**	0.000	0.010	0.031*	0.045***
<i>Childcare fee exemption for all children</i> ^b	0.733***	0.744***	0.868***	0.637***	0.914***	0.609***	0.563***
<i>Childcare fee exemption from 2nd child onwards</i> ^b	0.282***	0.245**	0.171	0.412*	0.471***	0.397**	0.093
<i>Apartment with 4 bedrooms</i> ^c	-0.302***	-0.386***	0.127	-0.464**	-0.329**	-0.246*	-0.364***
<i>Apartment monthly rental fee</i>	-0.071***	-0.082***	-0.083**	0.017	-0.069*	-0.101***	-0.080**
<i>Education expense subsidy up to undergraduate degree</i> ^d	0.462***	0.419***	0.224	0.542*	0.364*	0.806***	0.668***
<i>Education expense subsidy up to high school</i> ^d	0.264***	0.233***	0.277	0.161	0.168	0.481***	0.401**
<i>Childcare leave period for self</i>	0.076***	0.097**	0.130*	0.099	0.116**	-0.099	0.051
<i>Childcare leave period for husband</i>	0.202***	0.214***	0.064	0.213**	0.248***	0.193*	0.242**
Log-likelihood	-6189.39	-2473.80	-769.57	-583.35	-928.91	-650.84	-730.81
Observations	3752	1510	478	354	576	394	440

Note: Predictive power refers to the proportion of choices correctly predicted by the model. *, **, and *** denote that the estimated parameter is significantly different from zero at the 10%, 5%, and 1% levels, respectively. ^a The base for comparison was 15 years of age. ^b The base for comparison is from 3rd child onwards. ^c The base is compared with 3 bedrooms. ^d The base for comparison was middle school. Standard errors and z values are omitted to save space.

Table 3-2. Conditional Logit estimates of preferences for childbirth support measures –respondents’ education level and number of children subsamples

	High school or below			University or above		
	No child	1 child	Over 2 children	No child	1 child	Over 2 children
<i>Package A</i>	1.130***	0.496	-0.235	0.648***	1.260***	1.091***
<i>Package B</i>	0.114	0.216	0.085	0.262*	0.597**	0.676***
<i>Lump sum payment</i>	0.001***	0.000	0.001**	0.001***	0.000	0.000
<i>Medical expenses subsidy until 22 years</i> ^a	-0.361***	-0.476**	-0.119	-0.171*	-0.105	-0.039
<i>Medical expenses subsidy until 18 years</i> ^a	0.290**	0.479***	0.248	0.229*	-0.089	0.528***
<i>Self-pay amount for medical expenses</i>	0.000	0.000	0.000	0.000	0.000	0.001*
<i>Supermarket discount card expiration date</i>	0.013	-0.026	-0.009	0.007	0.023*	0.011
<i>Supermarket discount card discount rate</i>	0.017	0.054***	0.030	0.027***	0.010	0.024
<i>Childcare fee exemption for all children</i> ^b	1.054***	1.181***	0.675***	0.640***	0.440***	0.546***
<i>Childcare fee exemption from 2nd child onwards</i> ^b	0.560***	0.536**	0.304	0.158	0.087	0.166
<i>Apartment with 4 bedrooms</i> ^c	-0.398***	-0.323*	-0.331	-0.360***	0.137	-0.474***
<i>Apartment monthly rental fee</i>	-0.123***	-0.144***	-0.021	-0.049**	-0.049*	-0.044
<i>Education expense subsidy up to undergraduate degree</i> ^d	0.496***	0.490**	0.765**	0.358***	0.452*	0.515***
<i>Education expense subsidy up to high school</i> ^d	0.362***	0.491***	0.392*	0.132	0.289*	0.212
<i>Childcare leave period for self</i>	0.136**	-0.008	0.204**	0.079*	0.054	-0.011
<i>Childcare leave period for husband</i>	0.250***	0.270***	0.293***	0.207***	0.044	0.169
Log-likelihood	-1348.97	-590.38	-563.24	-2039.18	-824.25	-738.03
Observations	861	369	343	1225	503	451

Note: Predictive power refers to the proportion of choices correctly predicted by the model. *, **, and *** denote that the estimated parameter is significantly different from zero at the 10%, 5%, and 1% levels, respectively. ^a The base for comparison was 15 years of age. ^b The base for comparison is from 3rd child onwards. ^c The base is compared with 3 bedrooms. ^d The base for comparison was middle school. Standard errors and z values are omitted to save space.

Table 3-3. Conditional Logit estimates of preferences for childbirth support measures –respondents’ employment status and number of children subsamples

	Not full-time employed			Full-time employed		
	No child	1 child	Over 2 children	No child	1 child	Over 2 children
<i>Package A</i>	0.728***	0.854**	0.506**	0.940***	1.061***	0.597
<i>Package B</i>	0.187	0.275	0.506***	0.219	0.611**	0.172
<i>Lump sum payment</i>	0.001***	0.000	0.001**	0.001***	0.000	0.000
<i>Medical expenses subsidy until 22 years</i> ^a	-0.250***	-0.236	-0.039	-0.229**	-0.276	-0.091
<i>Medical expenses subsidy until 18 years</i> ^a	0.457***	0.421**	0.303*	0.093	-0.078	0.671**
<i>Self-pay amount for medical expenses</i>	0.000	0.000	0.000	0.000	0.000	0.001
<i>Supermarket discount card expiration date</i>	0.013	-0.005	0.008	0.006	0.012	-0.006
<i>Supermarket discount card discount rate</i>	0.017	0.036**	0.024*	0.029***	0.021*	0.027
<i>Childcare fee exemption for all children</i> ^b	0.857***	0.727***	0.492***	0.739***	0.764***	0.878***
<i>Childcare fee exemption from 2nd child onwards</i> ^b	0.281**	0.270	0.189	0.320***	0.260*	0.384
<i>Apartment with 4 bedrooms</i> ^c	-0.402***	-0.139	-0.430***	-0.342***	0.028	-0.318*
<i>Apartment monthly rental fee</i>	-0.108***	-0.124***	-0.014	-0.054**	-0.061*	-0.099
<i>Education expense subsidy up to undergraduate degree</i> ^d	0.520***	0.186	0.702***	0.311***	0.740***	0.363
<i>Education expense subsidy up to high school</i> ^d	0.395***	0.323	0.316**	0.064	0.426***	0.250
<i>Childcare leave period for self</i>	0.077	-0.001	0.027	0.119**	0.058	0.203
<i>Childcare leave period for husband</i>	0.312***	0.026	0.316***	0.158**	0.216**	-0.053
Log-likelihood	-1503.26	-681.24	-957.82	-1892.89	-741.76	-353.63
Observations	929	413	579	1157	459	215

Note: Predictive power refers to the proportion of choices correctly predicted by the model. *, **, and *** denote that the estimated parameter is significantly different from zero at the 10%, 5%, and 1% levels, respectively. ^a The base for comparison was 15 years of age. ^b The base for comparison is from 3rd child onwards. ^c The base is compared with 3 bedrooms. ^d The base for comparison was middle school. Standard errors and z values are omitted to save space.

Table 3-4. Conditional Logit estimates of preferences for childbirth support measures –respondents’ household income and number of children subsamples

	Less than 6 million JPY			6 million JPY or more		
	No child	1 child	Over 2 children	No child	1 child	Over 2 children
<i>Package A</i>	0.661***	0.476	0.394	1.009***	1.265***	0.569**
<i>Package B</i>	0.238	0.428	0.032	0.167	0.447**	0.537***
<i>Lump sum payment</i>	0.001***	0.000	0.001***	0.001***	0.000	0.000
<i>Medical expenses subsidy until 22 years</i> ^a	-0.125	-0.538**	-0.231	-0.341***	-0.080	0.018
<i>Medical expenses subsidy until 18 years</i> ^a	0.252*	0.470**	0.566**	0.263**	-0.079	0.354*
<i>Self-pay amount for medical expenses</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Supermarket discount card expiration date</i>	0.016	-0.007	0.055**	0.002	0.008	-0.014
<i>Supermarket discount card discount rate</i>	0.025**	0.050**	0.009	0.023**	0.016	0.030**
<i>Childcare fee exemption for all children</i> ^b	0.740***	0.999***	0.929**	0.840***	0.570***	0.476***
<i>Childcare fee exemption from 2nd child onwards</i> ^b	0.240*	0.173	0.467	0.367***	0.327**	0.163
<i>Apartment with 4 bedrooms</i> ^c	-0.369***	-0.322*	-0.716***	-0.372***	0.128	-0.296**
<i>Apartment monthly rental fee</i>	-0.080***	-0.076*	-0.086	-0.078***	-0.103***	-0.017
<i>Education expense subsidy up to undergraduate degree</i> ^d	0.414***	0.685**	0.780**	0.398***	0.338*	0.558***
<i>Education expense subsidy up to high school</i> ^d	0.163	0.498**	0.286	0.267***	0.285*	0.278**
<i>Childcare leave period for self</i>	0.110**	0.148**	0.074	0.095*	-0.050	0.070
<i>Childcare leave period for husband</i>	0.256***	0.058	0.214	0.194***	0.177*	0.223***
Log-likelihood	-1654.56	-579.94	-345.59	-1745.14	-831.36	-965.21
Observations	1004	358	216	1082	514	578

Note: Predictive power refers to the proportion of choices correctly predicted by the model. *, **, and *** denote that the estimated parameter is significantly different from zero at the 10%, 5%, and 1% levels, respectively. ^a The base for comparison was 15 years of age. ^b The base for comparison is from 3rd child onwards. ^c The base is compared with 3 bedrooms. ^d The base for comparison was middle school. Standard errors and z values are omitted to save space.

Table 4. Logit estimates of the factors affecting the probability of choosing Option D

	Model 1	Model 2
<i>Age36</i>	0.220***	0.441***
<i>Unmarried</i>	0.088**	0.273***
<i>Child</i>	-0.289***	-0.142*
<i>University or above</i>	-0.016	-0.003
<i>Full-time employed</i>	-0.089**	-0.087*
<i>Part-time employed</i>	-0.048	-0.050
<i>Age36*Unmarried</i>		-0.277***
<i>Age36*Child</i>		-0.199*
Log-likelihood	-262.77	-259.40
Observations	500	500

Notes: The marginal effects are presented in the table. *, **, and *** denote that the estimated parameter is significantly different from zero at the 10%, 5%, and 1% levels, respectively. Standard errors and *z* values are omitted to save space.