Smokers' Preference for Divorce and Extramarital Sex

Yamamura, Eiji

20 August 2012

Smokers' Preference for Divorce and Extramarital Sex

Eiji Yamamura[1]

Department of Economics, Seinan Gakuin University, 6-2-92 Sawaraku, Nishijin, Fukuoka 814-8511, Japan

[1]E-mail address: yamaei@seinan-gu.ac.jp

Abstract

Smokers are more impatient and, unlike nonsmokers, they tend to prefer current benefits. In this paper, individual-level data from Japan are used to examine how preferences for divorce and extramarital sex are different between smokers and nonsmokers. After controlling for various individual characteristics, the major findings are as follows: (1) smokers are more likely to have a positive view about divorce than nonsmokers; (2) smokers are more likely to have a positive view about extramarital sex than nonsmokers. These results were observed regardless of the individual's marital status. The findings here about smoker's preferences are consistent with the characteristics of smokers suggested in the literature.

JEL classification:
Keywords: smokers; divorce; extramarital sex.

1. Introduction

Large numbers of studies concerning smoking behavior have been compiled in the field of social science. It has been found that smokers are more impatient than nonsmokers and so are more present-oriented (e.g., Khwaja et al., 2006a,b). Hence, whether an individual smokes or not can be considered to reflect the individual's discount rate (Fuchs 1982; Munasinghe et al., 2006). Medical studies have shown that smoking has a detrimental effect on health. From the viewpoint of economics, this can be interpreted as suggesting that smokers consider the current benefits of smoking to be greater than its future cost, such as declining health. Apart from the relationship between smoking and health, various empirical studies have investigated how smoking is associated with economic outcomes, such as wages, the use of seat belts, and the experience of injury (e.g., Hersch and Visvusi 1990; Hersch 1996; Levine et al., 1997; Viscusi and Hersch 2001)[2].

Because of passive smoking, smoking behavior causes negative externality on people in the smoker's surroundings, including colleagues in the workplace, a girl (or boy) friend, and family members. Hence, it is necessary for policy makers to reduce the externality, and numerous studies have dealt with this issue. In contrast to this approach, the present paper attempts to consider how the characteristics of smokers are related to their attitude toward such family issues as divorce and extramarital sex: these family issues need to be considered from a long-term viewpoint. The happiness created by marriage has been found to diminish within a few years of marriage (Lucas et al, 2003). However, maintaining a good relationship with one's spouse appears to result in long-term benefits. For example, married people invest in assets that would be less valuable if the marriage were dissolved. "Children are an important example…since one parent usually has much less contact with the children after dissolution" (Becker et al. 1977, p.1152). Furthermore, the husband or wife can receive benefit from the mutual aid provided by their spouse as they become older and in greater need of assistance. This is especially important if government social security is insufficient and the care-giving market does not function well. Investments that are significantly less valuable for single people can be termed "marital specific" (Becker 1974, p.338).

The benefit from marital-specific investment can be obtained if a couple does not divorce. In addition, whether one can enjoy the benefit from marriage depends on

[2] Like smoking, alcohol is also regarded as a type of additive goods. Previous works have investigated how alcohol affects risky sexual behavior and pregnancy (Sen 2002; 2003).

developing a stable, intimate marital relationship with the spouse (and other family members). Decision making within a household depends on the family members as a whole rather than a single individual. Hence, in some situations, compromises are required for the general gratification of all family members. Patience is an important factor in married life in preserving or increasing the welfare of the family. Put differently, in a household, it is necessary to maintain good relations with other family members at the expense of individual gratification. Therefore, marital life would seem to be harmed by the fact that if one of the members is a smoker, they sacrifice some distant benefit for more present-oriented gratification. That is, it can be predicted that a smoker's marital life will inevitably be unstable. However, no empirical study has dealt with this point, although a number of works have probed the determinants of divorce and extramarital sex (e.g., Fair 1978; Yen 1999; Cameron 2002; Fan and Lui 2004; Bishai and Grossbard 2010)[3]. Thus, the relationship between smokers and their attitude toward and perception of divorce and extramarital sex is worth investigating.

The current study attempted to examine how smokers' views about divorce and extramarital sex are different from those of nonsmokers using individual-level data from the Japanese General Social Survey (JGSS). The most important findings of this study were that smokers are more likely to have a positive view about divorce and extramarital sex than nonsmokers. These results were observed regardless of the individual's marital status.

The remainder of this article is organized as follows. In Section 2, the testable hypothesis is presented. Section 3 offers an explanation of the data and empirical method used. Section 4 provides the estimation results and their interpretation. The final section offers some conclusions and policy implications.

2. Hypothesis

Having sex is positively associated with happiness and so with utility (Blanchflower and Oswald, 2004). However, if this relationship has a decreasing return to scale, the marginal effect of having sex with the same partner decreases as the number of times having sex with that partner increases. Entering into

[3] Many studies have considered health issues, such as drinking alcohol and substance use, in terms of marriage or sexual behavior (e.g., Chesson et al., 2000; Rees et al., 2001; Averett et al., 2004; Grossman et al., 2004; Grossman and Markowitz 2005;Markowitz et al., 2005; Carpenter 2005; Waddell 2012). However, those investigations did not assume that consuming alcohol and substance reflected an individual's time preference.

matrimony means that married people obtain a socially approved sex partner—the spouse. However, extramarital sex is generally taboo[4]. Therefore, opportunities to have sex with the spouse are abundant, whereas opportunities to have sex with others are scarce. Hence, the marginal utility that derives from having sex with the spouse is smaller than that with others[5]. This gives married people an incentive to engage in extramarital sex. However, in addition to sex, maintaining a good relationship with the spouse generates various kinds of benefits, such as psychological stability, mutual care, and happiness for the children[6]. Hence, a harmonious, cooperative relationship within a family increases the utility of the individual and family members, which causes married people to invest in the family relationship. Furthermore, investment in the relationship with the spouse is marital specific because the return from such investment becomes zero once people get divorced (Becker 1974, p.338). Extramarital affairs are one of the main reasons for divorce (Fan and Lui, 2004)[7]. Therefore, apart from the divorce settlement, the cost of extramarital sex is to lose the various benefits of a stable family.

The decision on whether or not to have extramarital sex is analogous to that on whether or not to commit a crime (Fair 1978). In making the decision, the individual weighs the gain from committing a crime against the expected loss, which is the probability of being caught multiplied by the cost if caught (Becker 1968). In this framework, decision making on whether married people engage in extramarital sex depends on (1) the benefit from extramarital sex, (2) the cost of divorce, and (3) the probability of divorce if they have extramarital sex. The expected cost of extramarital sex is considered to be the expected cost of divorce. According to previous studies, smokers are more impatient and so are inclined to prefer current utility to future cost (e.g., Khwaja et al., 2006 a, b; Munasinghe and Sicherman, 2006). Therefore, for smokers, the benefit from extramarital sex would be greater than the expected cost. If the current benefit of extramarital sex was sufficiently high, smokers would tend to have extramarital sex even if it resulted in divorce. Put differently, divorce does not greatly reduce a smoker's utility, which leads them to

[4] Perceptions about extramarital sexual relations partly depend on informal institutional conditions; thus, husbands are able to justify their extramarital affairs in some parts of Africa (Kimura and Djamba 2005; Bishai and Grossbard 2010).
[5] A mixture of altruism and demand for togetherness increases the likelihood that one of the partners may fake an orgasm (Mialon, 2012).
[6] Parents' utility is positively related with their children's utility (Becker 1983).
[7] A number of socioeconomic factors determine the likelihood of divorce, such as bankruptcy (Fisher and Lyons 2006), religion Berggren (1997), economic independence (Hiedemann et al., 1998), and divorce laws (Drewianka 2008; Liu 2008).

have extramarital sex. As another instance of smokers being more willing to bear risk (Khwaja 2006 a), they are more inclined to engage in extramarital sex even if the benefit of such sex is not particularly large.

From the above argument, the hypothesis is proposed as follows:

Hypothesis:

Smokers are less likely to have a negative view about divorce and extramarital sex than nonsmokers.

3. Data and Methods

3.1. Data

I used JGSS data in the current study. The JGSS data were individual-level data that were gathered by the method of two-stage stratified sampling[8]. The JGSS was purposefully designed as a Japanese counterpart to the GSS of the United States and was conducted throughout Japan from 2000 to 2010. The JGSS dataset used in this study covered 2000, 2001, 2002, 2003, 2005, 2006, and 2008.[9] The JGSS asked various questions in face-to-face interviews concerning an individual's characteristics. Hence, the data contain information related to views about family issues, such as extramarital sex and divorce, smoking behavior, marital and demographic (age and sex) status, annual household income[10], years of schooling, and political views. A question about extramarital sex was included in the surveys between 2000 and 2001, and a question about divorce was included in the surveys between 2002 and 2008. As indicated in Table 1, the number of observations used for the estimation about extramarital sex was 3,679, whereas the number of observations employed for the estimation about divorce was 6,730. The present paper attempts to investigate the determinants of views regarding divorce and extramarital sex. Thus, the sample used for examining views about divorce is different from that used for examining views about extramarital sex. Hence, careful attention is required regarding the difference in the samples for the examination.

[8]Data for this secondary analysis, "Japanese General Social Survey (JGSS), Ichiro Tanioka," were provided by the Social Science Japan Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, The University of Tokyo.
[9]Surveys were not conducted in 2004 and 2007. The data for 2009 and 2010 could not be obtained.
[10]In the original dataset, annual earnings were grouped into 19 categories, and I assumed that everyone in each category earned the midpoint value. For the top category of "23 million yen and above," it was assumed that everybody earned 23 million yen. Among observations used in the regression estimations, slightly less than 1% of observations occurred in this top category. Therefore, the problem of top-coding should not be an issue.

The definitions and basic statistics of variables used in the regression estimations are shown in Table 2. Values (mean value, standard deviation, maximum value, and minimum value) are calculated based on the sample used for estimating views about divorce, whereas the values in parentheses are calculated based on the sample used for estimating views about extramarital sex. Each value relating to the same variable is similar between different samples. The key variables are DIVORCE (view about divorce) and ESEX (view about extramarital sex). DIVORCE was used as a proxy for preferences for divorce. In the JGSS, a question about divorce states, “A person who is not satisfied with his or her spouse, should be able to divorce at any time.” There were five response options, ranging from 1 (disagree) to 4 (agree). DIVORCE was the value that the respondents chose. ESEX was used as a proxy for preferences for extramarital sex. The question relating to it was as follows: “What is your opinion about a married person having sexual relations with someone other than the marriage partner?” There were five response options, ranging from 1 (always wrong) to 4 (not wrong at all). ESEX was the value that the respondents chose.

As evident in Table 2, the average value for DIVORCE was 2.30, which suggests that people generally tend to have a somewhat positive view regarding divorce. Conversely, the average value for ESEX was 1.64, which suggests that people generally tend to have a somewhat negative view regarding extramarital sex. As presented in Figure 1, the most frequent response was 2. It is clear in Figure 2 that the most frequent response was 1, and the proportion of people who chose 3 or 4 was very low. Overall, the distribution pattern for DIVORCE is remarkably different from that for ESEX. As is apparent in Table 2 and Figures 1 and 2, people do not directly connect extramarital sex with divorce. Furthermore, having a negative view about extramarital sex is more common than having a negative view about divorce. This may be because divorce as a preferable option is dependent on the particular situation whereas that does not apply with extramarital sex.

Table 3 indicates that smokers’ mean values for DIVORCE and ESEX are greater than nonsmokers’, and this is statistically significant at the 1% level. This implies that smokers are more likely to hold a positive view regarding divorce and extramarital sex than nonsmokers. This is consistent with the proposed hypothesis. For a closer examination of the relationship between smokers and views about divorce and extramarital sex, various socioeconomic factors should be controlled for by regression estimations.

3.2. Econometric Framework and Estimation Strategy

For the purpose of assessing the proposed hypothesis, the estimated function of the baseline model is as follows:

DIVORCE (or ESEX) $_i = \alpha_1$ SMOK $_i + \alpha_2$AGE $_i + \alpha_3$MARRIED $_i$ + α_4CHILD$_i$ + α_5SCHOOLING$_i$ + α_6UNEMPLOYED$_i$+ α_7MALE$_i$ +α_8PROG2$_i$ +α_9PROG3$_i$ +α_{10}PROG4$_i$ +α_{11}PROG5$_i$ + u_i,

where DIVORCE (or ESEX)$_i$ represents the dependent variable in individual i. Regression parameters are represented by α. As explained earlier, values for DIVORCE (or ESEX) range from 1 to 4, which can be regarded as an ordered response. In this case, the ordered probit model is applicable; hence, it was used to conduct the estimations (Greene 1997). The error term is represented by u_i. During the study period, macroeconomic conditions in Japan were subject to various exogenous shocks. Macroeconomic shocks appear to have an effect on an individual's perception. Therefore, this study included year dummies to include macroeconomic shocks[11]. In addition to the ordered probit model, for a robustness check I also used a probit model in which the dependent variable took a value of 1 or 0. In this specification, the value of DIVORCE (or ESEX) is 0 when DIVORCE (or ESEX) takes 1 or 2 in the ordered probit model. The value of DIVORCE (or ESEX) is 1 when DIVORCE (or ESEX) takes 3 or 4 in the ordered probit model.

The most important variable in determining the effect of a smoker's preference is SMOK. If smokers are more likely to hold positive views about divorce (or extramarital sex), SMOK is predicted to have a positive sign when the dependent variable is DIVORCE (or ESEX). As is widely known, the smoking rate among males in Japan is far higher than among females (Yamamura 2011a). Hence, smoking behavior is determined not only by innate individual preference but also by gender. However, there appear to be differences in views about family issues between males and females. Accordingly, gender differences possibly affect smoking

[11] It is reasonable to assume that observations may be spatially correlated within a geographic area. This is because the preference of one agent may be well related to the preference of another in the same area. To consider such a spatial correlation in line with this assumption, the Stata cluster command was used and Z statistics were calculated using robust standard errors. The advantage of this approach is that the magnitude of spatial correlation can be unique to each area. The JGSS data contained information about the prefecture in which the respondents lived. A Japanese prefecture is equivalent to a state in the United States or a province in Canada. Therefore, spatial correlation was assumed to be unique within each prefecture.

behavior as well as views about divorce and extramarital sex. Therefore, it is important to control for gender difference to avoid the possibility of a spurious correlation between smoking behavior and views about divorce and extramarital sex when determinants of views about them are examined. Accordingly, MALE (male dummy) is included as an independent variable. It is evident in Table 4 that males are more likely to smoke than females. Furthermore, the mean value for DIVORCE among men is smaller than among women, and it is statistically significant at the 1% level. This implies that men are less inclined to hold a positive view about divorce than women. This is inconsistent with findings in Western countries, where women experience a serious reduction in post-divorce income, whereas the effects of divorce are less dramatic for the ex-husbands (Smock 1993; Burkhauser et al. 1990; 1991)[12].

In my interpretation, the psychological cost of marriage for a wife, such as in terms of domestic violence, is possibly greater than the cost of divorce. However, men in Japan can enjoy a greater benefit from marital life than women since this country is characterized by a patriarchal society. In line with this conjecture, Yamamura (2010) found that divorce increases the suicide rate and that this effect of divorce is greater for men than for women in Japan. What is more, as evident in Table 4, the proportion of male smokers, at 44%, is distinctly greater than that for female smokers, at 13%. It is interesting to observe that smokers tend to have a positive view about divorce whereas males are unlikely to have such a positive view. This leads me to argue that the male preference is not always equivalent to the smoker's preference even though males are more likely to be smokers. By contrast, the mean value for ESEX among males is greater than among females, and it is statistically significant at the 1% level. This suggests that men are more apt to have a positive view about extramarital sex than women. Hence, the results in Tables 3 and 4 suggest that concerning extramarital sex, the male preference is equivalent to the smoker's preference. The combined results of DIVORCE and ESEX suggest that men expect a low probability of divorce as an outcome of extramarital sex. I interpret this as implying that the male-dominated Japanese society leads men to consider extramarital sex as being within permissible limits.

An individual's values are thought to be shaped by the socioeconomic situations in which they grew up. Japan experienced rapid economic growth after World War II. During that period, people's values about marital status seem to have changed

[12] Bratberg and Tjøtta (2008) suggested that the Norwegian post-divorce transfer system is fairly successful in equalizing the economic costs of divorce.

drastically. In traditional Japanese society, people attached importance to social networks, such as those of the community and family. However, in modern society, people have become more individualistic, and so the effect of the community and family on decision making has become weaker (Yamamura 2011b). Thus, the importance of the community and family has declined (Yamamura 2009). A similar social change has also been observed in the United States (Putnam 2000). AGE is included to capture such differences in value between generations. Older people are considered more conservative, and so the expected sign of coefficient of AGE is negative for estimations of DIVORCE and ESEX. Furthermore, individual values about family issues are related to political views. The more liberal individuals are, the more likely they are to have positive views about divorce and extramarital sex. Hence, I included dummies for political view (PROG_2, PROG_3, PROG_4, and PROG_5), where PROG_1 is the reference group. Their signs are predicted to become positive for estimations of both DIVORCE and ESEX.

During marital life, married people invest in marital-specific capital, which is significantly less valuable if they get divorced (Becker 1974). The cost of divorce for married people includes vanishment of marital-specific capital increasing their utility. However, single people cannot calculate such cost precisely, and so the cost of divorce for married people is higher than for single people. In addition, having a child is a kind of marital-specific capital (Becker et al. 1977). Therefore, MARRIED and CHILD are predicted to have a negative sign for divorce estimation.

The more highly educated people are, the more they are likely to earn in the future. Hence, they are more competitive in the marriage market even after having experienced divorce. High-income people are also considered to be more competitive in the market. Hence, the expected signs for SCHOOLING and INCOME are positive for DIVORCE estimation. Conversely, unemployed people are less competitive in the market. Therefore, the expected sign of UNEMPLOYED is negative for DIVORCE estimation. Furthermore, smokers are observed to be low earners (Hersch 1996; Levine et al., 1997; Munasinghe and Sicherman 2006). Hence, the inclusion of INCOME and UNEMPLOYED controls for this smoker characteristic, thereby reducing omitted variables bias.

4. Estimation Results

The results of DIVORCE estimations are given in Tables 5–7, while those of ESEX appear in Tables 8–10. The results of the baseline model are presented in

Tables 5 and 8. In Tables 5 and 8, the results of the ordered probit appear in columns (1)–(3), whereas those of the probit model are presented in columns (4)–(6). In Tables 6, 7, 9, and 10, results of the ordered probit are exhibited in columns (1) and (2), whereas those of the probit model are presented in columns (3) and (4). According to specifications, the number of observations differs because the data for some independent variables were not available in some observations.

4.1. Estimation Results on Views about Divorce

I will begin with the results of DIVORCE estimations in Table 5. In all columns, the coefficient of SMOK yields the predicted positive sign, and it is statistically significant at the 1% level. This is congruent with the hypothesis. Furthermore, the degree of the coefficient is almost the same in the ordered probit estimations. As is shown in the probit estimation results, the marginal effect of the SMOK coefficient is about 0.03–0.04. This signifies that smokers are 3–4% more likely to have a positive view about divorce than nonsmokers.

Concerning control variables, MALE produces the predicted negative sign, and it is statistically significant at the 1% level in all columns; this is consistent with the results in Table 4. Political view dummies indicate a significant positive sign for PROG_4 and PROG_5, which is consistent with expectations. Also in line with predictions, the signs for AGE, MARRIED, and CHILD are negative and statistically significant at the 1% level in all columns. With respect to economic variables, SCHOOLING and INCOME are not statistically significant in some columns, although they yield the expected positive sign in all columns. This signifies that these results are not robust. Contrary to predictions, the sign of UNEMPLOYED is positive. However, it is not statistically significant in column (4), and so this result is not robust.

The effect of smoking seems to change according to marital status. Thus, I divided the sample into married and unmarried people to compare the effect of SMOK. Table 6 presents the results. That fact that SMOK exhibits a positive sign in all columns indicates that regardless of marital status, smokers are more likely to have a positive view about divorce. However, its absolute value for married people is smaller than for unmarried people. In the probit model, the marginal effect for married people is 0.03, which signifies that married smokers are 3% more likely to have a positive view about divorce than married nonsmokers. However, the marginal effect for married people is 0.05, which indicates that unmarried smokers are 5% more likely to have a positive view about divorce than unmarried nonsmokers. In my interpretation, the cost of divorce for married smokers is thought to attenuate their positive views about divorce.

As noted earlier, smoking results in negative externality for surrounding nonsmokers through passive smoking. Smokers have an incentive to quit smoking through social interaction with nonsmokers (Jones 1994). Hence, getting married may tend to make a smoker stop smoking if the spouse is not a smoker because the spouse may request the smoker not to smoke for the sake of the family's health. Generally, males are much more likely to be smokers than females, though in the data used for this paper there was no indication as to whether the spouse smoked or not. Therefore, the marriage effect is more likely to exist for men than for women. If this holds true, as a consequence of marriage, male smoking behavior is less likely to reflect personal preference. Conversely, female smoking behavior continues to reflect personal preference even if the woman gets married. To investigate how the marriage effect differs between genders, a cross-term between SMOK and MALE (SMOK* MALE) was added to the set of independent variables presented in Table 6. SMOK* MALE takes a negative sign in all estimations. Concerning the results of the ordered probit model, SMOK* MALE is statistically significant at the 1% level for married people, though it is not statistically significant for unmarried people. That is, smoking women are more apt to have a positive view about divorce. I interpret this result as implying that marriage reduces the effect of SMOK on views about divorce for men but not for women. Regarding the result of the Probit model, SMOK* MALE is statistically significant at the 10% level for married and unmarried people. Hence, the result for married people is robust according to the alternative specifications though that for unmarried people is not.

4.2. Estimation Results on Views about Extramarital Sex

I will now turn to the results regarding views about extramarital sex. It is evident in Table 8 that SMOK has a positive sign, and it is statistically significant at the 1% level in all columns. In line with the hypothesis, this implies that smokers are more likely to have a positive view about extramarital sex than nonsmokers. Concerning the magnitude, as seen in columns (4)–(6), the marginal effect of SMOK is 0.04–0.05. Thus, smokers are 4–5% more apt to have a positive view about divorce than nonsmokers.

With respect to control variables, in line with the results of Table 4, MALE has a positive sign and is statistically significant at the 1% level except in column (4).

From the results of MALE in Tables 3 and 4, I derive the argument that gender differences lead to differences in expectation about the probability that extramarital sex causes divorce. Congruent with this prediction, political view dummies exhibit a significant positive sign for PROG_2, PROG_3, PROG_4, and PROG_5. In line with this prediction, AGE has a negative sign and is statistically significant at the 1% level in all columns. Unlike the result for views about divorce, MARRIED and CHILD do not show robust results with the alternative specification. This seems to be partly because the sample size for the estimation of extramarital sex is far smaller than that for divorce. As for economic variables, in most cases, SCHOOLING, INCOME, and UNEMPLOYED are not statistically significant. In my interpretation, in contrast to views about divorce, extramarital sex appears to depend on ethical factors rather than socioeconomic condition.

For testing how and to what extent views about extramarital sex depend on marital status, the sample is divided into married and unmarried people in Table 9. In all columns, SMOK yields a positive sign. Results based on married people in the sample show a 1% level of statistical significance, whereas those based on unmarried people present a 10% level of significance. Although there is a difference in the statistical significance level, all estimations indicate that smokers are more inclined to have a positive view about extramarital sex than nonsmokers. Results of the probit model show that the marginal effect of SMOK is 0.04 regardless of marital status. This implies that married (or unmarried) smokers are 4% more likely to have a positive view about extramarital sex than married (or unmarried) nonsmokers. Unlike the result relating to views about divorce, marital status does not influence the effect of SMOK on views about extramarital sex. What is more, Table 10 indicates that SMOK*MALE shows a negative sign in all columns. However, SMOK*MALE is not statistically significant, with the exception of 10% statistical significance in column (2). The combined results of Tables 8–10 reveal that smokers are more likely to have a positive view about extramarital sex, though this is influenced by marital status. It would be interesting to explore the reason why smoking status affects views about divorce depending on marital status though the effect of smoking on views about extramarital sex does not. However, that matter is beyond of the scope of this paper.

The results in Tables 5–10 strongly support the hypothesis proposed in Section 2.

5. Conclusions and Some Policy Implications

A number of studies have found that smokers are more present-oriented and likely to take risks. That is, smoking provides important information about the people who smoke, and it allows us to predict, to a certain extent, differences in behavior between smokers and nonsmokers. For instance, such characteristics of smokers are thought to impede marital life because it is important to consider the long-term benefits of marital life in maintaining a good relationship with the spouse. However, no studies have examined this topic. Hence, the present study is the first to examine how smokers' views about divorce and extramarital sex are different from those of nonsmokers based on the JGSS data of Japan. The most important findings of this study are that (1) smokers are more likely to prefer divorce than nonsmokers and (2) smokers are more likely to have a positive view about extramarital sex than nonsmokers. These results are observed regardless of an individual's marital status. These findings about smoker's preferences are consistent with the characteristics of smokers suggested in the literature.

From the findings in the present paper, I derive the argument that whether one is a smoker or not presents important information in the marriage market. There is considerable information asymmetry between men and women when they search for a partner. After entering marital life, they can obtain information about their partner's character that was not available before marriage. For example, a suitor generally does not confess that he would like to have extramarital sex even if he may think so when he is in a relationship with a woman with a view toward marriage. However, his smoking habit can be considered a sign for his preference for extramarital sex and divorce. If on a date, the woman finds that the man smokes, she can know his concealed preferences and predict his future infidelity if they got married. Even if the man does not actually smoke on the date, the smell of cigarettes cannot be completely removed, and so through this she can know that there is a high probability that marital life with this man would become unstable. Before making a decision about marriage, the information relating to smoking behavior is very useful and can lead to a reduction in the information asymmetry in the marriage market. People would tend not to get married if they could predict a high probability of divorce. Thus, this paper makes the interesting policy implication that the preference of smokers should be known to people prior to marriage so as to lower divorce rates and reduce the number of single mothers (or fathers). Alternatively, this policy provides a fine incentive for single people who smoke to quit the habit.

It should be noted that there are some caveats when smoking is considered to capture preference. Some control variables appear to be correlated with time preference, which cannot be directly observed, and this results in endogenous bias. "Since the discount rate is unobservable it is always possible to claim that the observed net correlation are due to yet 'another' unobserved, or, even worse, unobservable individual characteristic" (Munasinghe and Sicherman 2006, p.597). These issues need to be addressed in future work.

References

Averett S.L., Rees D., Duncan B., Argys L.M. (2004). Race, ethnicity, and gender differences in the relationship between substance use and adolescent sexual behavior. The B.E. J of Econ Analysis & Policy: vol. 0(1).

Becker, G. (1968). Crime and punishment: an economic approach. J. Pol. Econ 76(2): 169-217.

Becker, G. (1974). A theory of marriage. In Economics of Family, edited by T.W. Schultz. Chicago: University Chicago Press.

Becker, G. (1975). Human Capital, 2nd edition, Chicago, II: University Chicago Press.

Becker, G. (1983). A Treatise on the Family. England ed. Harvard University Press, Cambridge.

Becker, G., Landes, E., Michael, R. (1977). An economic analysis of marital instability. J. Pol. Econ 85(6): 1411-1187.

Berggren, N. (1997). Rhetoric or reality? An economic analysis of the effects of religion in Sweden. J of Socio-econ 26(6), 571-596.

Bishai D, Grossbard S (2010). Far above rubies: Bride price and extramarital sexual relations in Uganda. J Pop Econ 23: 1177-1187.

Blanchflower, D.G., Oswald, A.G. (2004). Money, sex and happiness: an empirical study. Scand. J. Econ 106(3): 393-415.

Bratberg, E and Tjøtta, S.(2008)Income effects of divorce in families with dependent children. J Popul Econ 21, 439–461.

Burkhauser RV, Duncan GJ, Hauser R, Berntsen R (1990) Economic burdens of marital disruptions: a comparison of the United States and the Federal Republic of Germany. Rev Income Wealth 36(4):319–333.

Burkhauser RV, Duncan GJ, Hauser R, Berntsen R (1991) Wife or Frau, women do worse: acomparison of women and men in the United States and Germany after marital dissolution. Demography 28(3):353–360.

Cameron S (2002). The Economics of partner out trading in sexual market. J Bioecon 4(3): 195-222.

Carpenter, G. (2005). Youth alcohol use and risky sexual behavior: evidence from underage drunk driving lows. J Healt Econ 24(3) 613-628.

Chesson, H., Harrison, P., Kassler, W.J. (2000). Sex under the influence: the effect of alcohol policy on sexually transmitted disease rates in the United States. J Law & Econ 43: 215-238.

Drewianka, S.(2008). Divorce law and family formation. J Popul Econ 21:485–503.
Fair, R.C. (1978). A theory of extramarital affairs. J Pol Econ 86: 45-61.
Fan, C.S., Lui, H.K. (2004). Extramarital affairs, marital satisfaction, and divorce: evidence from Hong Kong. Con Econ Pol 22(4): 442-452.
Fisher, J.D., and Lyons, A.C. (2006). Till debt do us part: a model of divorce and personal bankruptcy. Rev Eon Household 4: 35-52.
Fuchs, V.R. (1982). Time preference and health: An exploratory study. In V.R. Fuchs (Ed). Economic Aspects of Health, Chicago; University of Chicago Press, 93-120.
Grossman, M., Kaestner, R., Markowitz, S. (2004). Get high and get stupid: The effect of alcohol and marijuana use on teen sexual behavior. Rev Econ Household 2(4): 413-441.
Grossman, M., Markowitz, S. (2005). I did what last night? Adolescence risky sexual behaviors and substance use. Eeast Econ J 31(3): 383-405.
Hersch, J. (1996). Smoking, seat belts, and other risky consumer decisions: differences by gender and race. Manag and Deci Econ: 471-481.
Hersch, J. (2000). Gender, income levels, and the demand for cigartts. J Risk and Uncertain: 263-282.
Hersch, J., Viscussi, W.K. (1990).Cigarette smoking, seatbelt use, and differences in wage-risk tradoffs. J Huma Res: 202-227.
Hiedemann, B., Suhomlinova, O., O'Rand, A.M. (1998). Economic independence, economic status, and empty next in midlife marital disruption. J of Marrriage and the Family, 60, 2190231.
Jones, A.M. (1994). Health, addiction, social interaction and the decision to quit smoking. J Health Econ 13: 93-110.
Levine, P.B., Gustafson, T.A., Velenchik A.D. (1997). More bad news for smokers? The effects of cigarette smoking on wages. Ind and Lab Rela Rev: 493-509.
Liu, X. (2008). An effective punishment scheme to reduce extramarital affairs: an economic approach. European Journal of Law and Economics 25(2):167-75.
Lucas, R.E., Clark, A, E., Georgellis, Y., Diener, E. (2003). Reexamining adaptation and the set model of happiness: reaction to change in marital status. Journal of Personality and social psychology 84: 527-536.
Khwaja, A., Sloan, F., Salm, M. (2006a). Evidence on preferences and subjective beliefs of risk takers: The case of smokers. Int J Ind Org 24: 667-682.
Khwaja, A., Sloan, F., Chung, S. (2006b). Learning about individual risk and decision to smoke. Int J Ind Org 24: 683-699.
Kimura S., Djamba Y (2005). Wealth and extramarital sex among men in Zambia.

Int Fam Plan Persepect 31(2): 83-89.
Markowitz, R., Kaestner, R., Grossman, M. (2005). An investigation of the effects of alcohol consumption and alcohol policies on youth risky sexual behaviors. Ame Econ Rev 95(2): 263-266.
Mialon, H.M. (2012). The economics of faking ecstasy. Econ Inq 50(1): 277-285.
Munasinghe, L., Sicherman, N. (2006). Why do dancers smoke? Smoking, time preference, and wage dynamics. East Econ J 32: 595-616.
Putnam, R. (2000). Bowling Alone: The Collapse and Revival of American Community, A Touchstone Book, New York.
Rees, D., Argys L, M., Averett S. L (2001). New evidence on the relationship between substance use and adolescent sexual behavior. J Health Econ 20(5): 835-845.
Sen B (2002) Does alcohol-use increase the risk of sexual intercourse among adolescents? Evidence from the NLSY97. J Health Econ 21(6): 1085-1093.
Sen B. (2003). Can beer taxes affect teen pregnancy? Evidence based on teen abortion rates and birth rates. Sout Econ J 70(2): 328-343.
Smock PJ (1993) The economic costs of marital disruption for young women over the past two decades. Demography 30(3):353–371.
Viscussi, W.K., Hersch, J. (2001). Cigarette smoking as job risk takers. Rev Econ and Stat: 269-280
Waddell, G.R. (2012). Gender and the influence of peer alcohol consumption on adolescent sexual activity. Econ Inq 50(1): 248-263.
Yamamura,E., (2009). Dynamics of social trust and human capital in the learning process: The case of the Japan garment cluster in the period 1968-2005. Journal of Economic Behavior and Organization 72 (1): 377-389.
Yamamura, E. (2010). The different impacts of socio-economic factors on suicide between males and females. Applied Economics Letters 17(10), 1009-1012.
Yamamura,E. (2011a). The effects of the social norm on cigarette consumption: evidence from Japan using panel data, Japan & World Economy 23(1): 6-12.
Yamamura,E. (2011b). Effects of sex preference and social pressure on fertility in changing Japanese families. MPRA Paper 32956.
Yen, S.T. (1999). Nonparticipation and corner solution: extramarital affairs reconsidered. Appl Econ Let 6: 443-445.

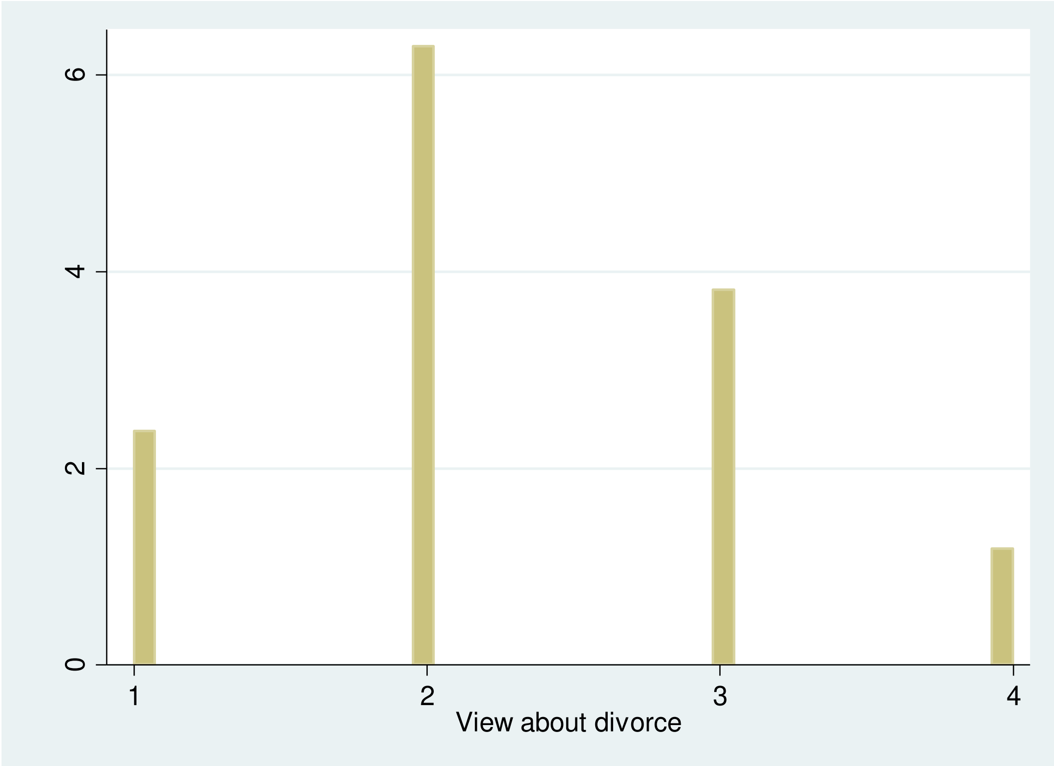

Figure 1. Histogram of views about divorce (*Divorce*).

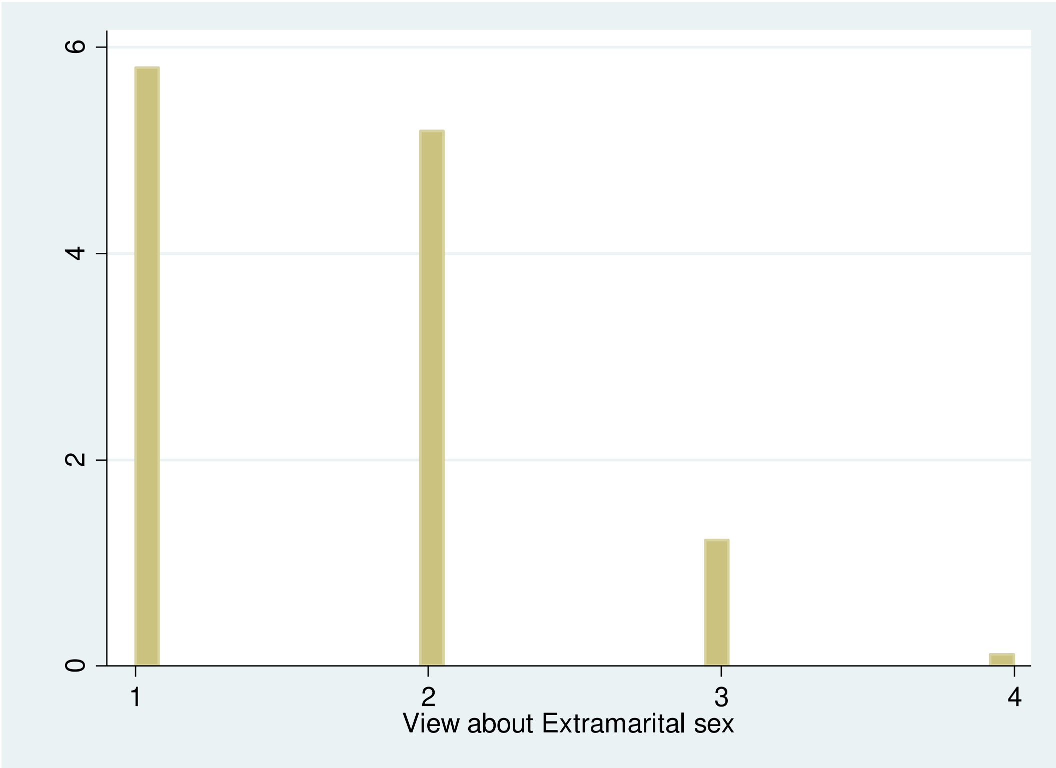

Figure 2. Histogram of views about extramarital sex (*Extramarital sex*).

Table 1. Construction of the research sample used for the estimation

Year	Sample used for estimation of views about divorce	Sample used for estimation of views about extramarital sex
2000	0	1,903
2001	0	1,776
2002	1,908	0
2003	1,274	0
2005	1,046	0
2006	1,234	0
2008	1,268	0
Total	6,730	3,679

Note: Observations were used in the analysis when all variables were available for the estimations.

Table 2. Basic statistics and definition of variables used for the estimations.

	Definitions	Mean	Standard deviation	Minimum	Maximum
DIVORCE	Question: A person, who is not satisfied with his/her spouse, should be able to divorce at any time Choices are: 1 (Disagree), 2 (somewhat disagree), 3 (Somewhat agree), 4(Agree)	2.30	0.83	1	4
ESEX	Question: What is your opinion about a married person having sexual relations with someone other than the marriage partner? Choices are: 1 (Always wrong), 2 (Almost always wrong), 3 (Wrong only sometimes), 4 (Not wrong at all)	(1.64)	(0.69)	(1)	(4)
SMOK	The value is 1 if the respondent is currently smoker; otherwise it is 0.	0.27 (0.32)	--- (---)	1 (1)	0 (0)
AGE	Age (years)	53.8 (51.4)	15.1 (15.3)	20	89
MARRIED	The value is 1 if the respondent is currently married; otherwise it is 0.	0.83 (0.78)	0.36 (0.41)	1 (1)	0 (0)
CHILD	Number of children	1.88 (1.78)	1.03 (1.14)	0	10
SCHOOLING	Years of schooling	12.2 (12.1)	2.5 (2.6)	6	18
INCOME	Individual household income (million yen)	611 (665)	417 (427)	0	2300
UNEMPLOYED	The value is 1 if the respondent is currently unemployed; otherwise it is 0.	0.01 (0.01)	--- (---)	1 (1)	0 (0)
MALE	The value is 1 if the respondent is male; otherwise it is 0.	0.49 (0.50)	--- (---)	1 (1)	0 (0)
PROG_1	Concerning political views, it takes 1 if respondents choose 1, otherwise 0. 1 (conservative) – 5 (progressive)	0.08 (0.09)	--- (---)	1 (1)	0 (0)

PROG_2	Concerning political views, it takes 1 if respondents choose 2, otherwise 0. 1 (conservative) – 5 (progressive)	0.21 (0.20)	--- (---)	1 (1)	0 (0)
PROG_3	Concerning political views, it takes 1 if respondents choose 3, otherwise 0 1 (conservative) – 5 (progressive)	0.49 (0.49)	--- (---)	1 (1)	0 (0)
PROG_4	Concerning political views, it takes 1 if respondents choose 4, otherwise 0. 1 (conservative) – 5 (progressive)	0.17 (0.18)	--- (---)	1 (1)	0 (0)

PROG_5	Concerning political views, it takes 1 if respondents choose 5, otherwise 0. 1 (conservative) – 5 (progressive)	0.04 (0.04)	--- (---)	1 (1)	0 (0)

Values are calculated based on sample used for estimation of views about divorce on column(1) of Table 4, while those in parentheses are based on sample used for estimation of views about extramarital sex on column(1) of Table 5.

Table 3. Mean difference tests for smokers and nonsmokers

	Smoker	*Non-smoker*	t-statistics
DIVORCE	2.37	2.27	4.25***
ESEX	1.75	1.59	6.84***

Sample of DIVORCE is equivalent to that used in column (1) of Table 4, while sample of ESEX is equivalent to that used in column (1) of Table 6. Absolute values of t-statistics are the results of a mean difference test between high- and low-income household groups. ***indicates significance at the 1% level.

Table 4. Mean difference tests for males and females

	Male	Female	t-statistics
SMOK	0.44	0.13	---
DIVORCE	2.25	2.34	-4.07***
ESEX	1.69	1.59	4.65***

Sample of SMOK is combined that used in column(1) of Table 4 and that of Table 5. Sample of DIVORCE is equivalent to that used in column (1) of Table 4, while sample of ESEX is equivalent to that used in column (1) of Table 6. Absolute values of t-statistics are the results of a mean difference test between high- and low-income household groups. ***indicates significance at the 1% level.

Table 5. Regression estimation where the dependent variable is DIVORCE

	Ordered probit model			Probit model		
	(1)	(2)	(3)	(4)	(5)	(6)
SMOK	0.11*** (4.13)	0.12*** (4.34)	0.13*** (4.73)	0.03*** (3.27)	0.04*** (4.00)	0.04*** (4.40)
AGE	-0.005*** (-4.97)	-0.005*** (-6.82)	-0.008*** (-12.0)	-0.002*** (-3.98)	-0.002*** (-5.26)	-0.003*** (-11.5)
MARRIED	-0.17*** (-4.83)	-0.08*** (-2.93)		-0.08*** (-5.59)	-0.04*** (-3.68)	
CHILD	-0.04*** (-2.93)	-0.04*** (-2.64)		-0.02*** (-3.00)	-0.01*** (-3.12)	
SCHOOLING	0.01* (1.78)	0.01*** (3.54)		0.003 (1.39)	0.006** (2.54)	
INCOME	0.07*** (2.68)			0.01 (0.99)		
UNEMPLOYED	0.26** (2.52)			0.06 (1.45)		
MALE	-0.13*** (-4.89)	-0.15*** (-4.94)	-0.14*** (-5.64)	-0.04*** (-3.69)	-0.06*** (-4.69)	-0.05*** (-4.67)
PROG_2	-0.05 (-0.87)	-0.01 (-0.22)		-0.03 (-1.31)	-0.03 (-1.41)	
PROG_3	0.07 (1.34)	0.08* (1.84)		0.01 (0.86)	0.01 (0.88)	
PROG_4	0.16** (2.53)	0.18*** (3.34)		0.07*** (2.92)	0.07*** (3.44)	
PROG_5	0.23** (2.29)	0.24*** (2.70)		0.10** (2.21)	0.08** (2.07)	
Log pseudolikelihood	-8068	-11606	-13203	-6192	-6223	-7075
Observations	6730	9687	10923	6730	9687	10923

Values are coefficients for ordered probit model, while values are marginal effect for probit model. Numbers in parentheses are z-statistics calculated using robust standard errors clustered in the prefecture. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. In all estimations, year dummies were included as independent variables. In estimations of Probit model, constant was also included. But they were not reported because of space limitations.

Table 6. Regression estimation where the dependent variable is DIVORCE—comparison between married and unmarried groups.

	Ordered probit model		Probit model	
	Married people	Unmarried people	Married people	Unmarried people
	(1)	(2)	(3)	(4)
SMOK	0.10***	0.17**	0.03***	0.05*
	(3.21)	(2.40)	(2.61)	(1.78)
AGE	-0.005***	-0.004***	-0.002***	-0.002**
	(-4.59)	(-2.19)	(-3.87)	(-2.18)
CHILD	-0.05***	-0.02	-0.02***	-0.01
	(-3.18)	(-0.75)	(-3.13)	(-1.25)
SCHOOLING	0.01*	0.01	0.005*	-0.001
	(1.88)	(0.54)	(1.91)	(-0.02)
INCOME	0.09***	-0.10	0.02	-0.001
	(3.49)	(-1.05)	(1.52)	(-1.28)
UNEMPLOYED	0.15	0.39***	0.02	0.13*
	(1.25)	(2.68)	(0.53)	(1.73)
MALE	-0.13***	-0.14*	-0.03***	-0.05*
	(-4.79)	(-1.75)	(-2.84)	(-1.83)
PROG_2	-0.03	-0.14	-0.03	-0.02
	(-0.51)	(-0.91)	(-1.45)	(-0.29)
PROG_3	0.09	-0.03	0.01	0.01
	(1.49)	(-0.27)	(0.81)	(0.22)
PROG_4	0.18***	0.07	0.07***	0.05
	(2.61)	(0.53)	(3.00)	(0.75)
PROG_5	0.22**	0.24	0.09**	0.12
	(1.97)	(0.27)	(2.03)	(1.17)
Log pseudolikelihood	-6616	-1423	-3754	-740
Observations	5629	1101	5629	1101

Values are coefficients for ordered probit model, while values are marginal effect for probit model. Numbers in parentheses are z-statistics calculated using robust standard errors clustered in the prefecture. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. In all estimations, year dummies were included as independent variables. In estimations of Probit model, constant was also included. But they were not reported because of space limitations.

Table 7. Regression estimation where the dependent variable is DIVORCE between SMOK and MALE

	Ordered probit model		Probit model	
	Married people	Unmarried people	Married people	Unmarried people
	(1)	(2)	(3)	(4)
SMOK* MALE	-0.23***	-0.26	-0.05*	-0.15*
	(-3.45)	(-1.43)	(-1.69)	(-1.66)
SMOK	0.27***	0.31**	0.07***	0.14*
	(4.25)	(2.08)	(2.67)	(1.92)
MALE	-0.08***	-0.05	-0.03*	-0.001
	(-2.83)	(-0.68)	(-1.84)	(-0.03)
Log pseudolikelihood	-6611	-1422	-3472	-738
Observations	5629	1101	5629	1101

Values are coefficients for ordered probit model, while values are marginal effect for probit model. Numbers in parentheses are z-statistics calculated using robust standard errors clustered in the prefecture. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. In all estimations, independent variables used in Table 7 are included. In estimations of Probit model, constant was also included. But they were not reported because of space limitations.

Table 8. Regression estimation where the dependent variable is ESEX

	Ordered probit model			Probit model		
	(1)	(2)	(3)	(4)	(5)	(6)
SMOK	0.16***	0.14***	0.15***	0.04***	0.04***	0.05***
	(3.57)	(4.17)	(4.40)	(4.96)	(5.50)	(6.26)
AGE	-0.009***	-0.008***	-0.01***	-0.001***	-0.001***	-0.001***
	(-5.52)	(-6.97)	(-11.6)	(-5.66)	(-6.52)	(-6.55)
MARRIED	-0.10*	-0.04		-0.03**	-0.01	
	(-1.82)	(-1.10)		(-2.39)	(-1.17)	
CHILD	-0.02	-0.02		0.001	-0.001	
	(-0.80)	(-1.24)		(0.23)	(-0.14)	
SCHOOLING	0.01	0.006		-0.002	-0.003*	
	(1.27)	(0.98)		(-0.96)	(-1.82)	
INCOME	0.07			0.004		
	(1.22)			(0.26)		
UNEMPLOYED	0.20			0.05*		
	(1.57)			(1.68)		
MALE	0.14***	0.16***	0.16***	0.02**	0.02***	0.02***
	(3.19)	(4.52)	(4.89)	(2.13)	(2.97)	(2.87)
PROG_2	0.19***	0.25***		0.01	0.03**	
	(2.59)	(4.20)		(0.88)	(2.19)	
PROG_3	0.27***	0.28***		0.02	0.03**	
	(4.10)	(4.47)		(1.41)	(2.16)	
PROG_4	0.32***	0.37***		0.03	0.04**	
	(4.47)	(5.97)		(1.46)	(2.52)	
PROG_5	0.19*	0.26***		0.07**	0.10***	
	(1.75)	(2.85)		(2.47)	(4.17)	
Log pseudolikelihood	-3554	-5206	-5399	-1225	-1787	-1857
Observations	3679	5388	5571	3679	5388	5571

Values are coefficients for ordered probit model, while values are marginal effect for probit model. Numbers in parentheses are z-statistics calculated using robust standard errors clustered in the prefecture. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. In all estimations, year dummies were included as independent variables. In estimations of Probit model, constant was also included. But they were not reported because of space limitations.

Table 9. Regression estimation where the dependent variable is ESEX—comparison between married and unmarried groups.

	Ordered probit model		Probit model	
	Married people	Unmarried people	Married people	Unmarried people
	(1)	(2)	(3)	(4)
SMOK	0.15***	0.16*	0.04***	0.04*
	(2.86)	(1.76)	(4.56)	(1.72)
AGE	-0.009***	-0.008**	-0.001***	-0.002***
	(-5.74)	(-2.36)	(-5.00)	(-2.78)
CHILD	-0.02	-0.02	-0.002	0.009
	(-1.11)	(-0.36)	(-0.40)	(0.64)
SCHOOLING	0.01	0.02	-0.001	-0.007
	(0.91)	(1.05)	(-0.71)	(-1.60)
INCOME	0.10*	-0.02	0.01	-0.02
	(1.68)	(-0.33)	(1.08)	(-0.77)
UNEMPLOYED	0.18	0.25	0.09**	0.001
	(0.88)	(1.28)	(2.02)	(0.03)
MALE	0.15***	0.09	0.22**	0.03
	(3.20)	(1.19)	(2.11)	(1.33)
PROG_2	0.30***	-0.20	0.03	-0.03
	(3.84)	(-1.15)	(1.71)	(-0.78)
PROG_3	0.34***	0.04	0.04*	-0.02
	(4.16)	(0.35)	(1.82)	(-0.49)
PROG_4	0.40***	0.05	0.03	0.03
	(5.58)	(0.31)	(1.34)	(0.76)
PROG_5	0.16	0.21	0.07*	0.08
	(1.33)	(0.85)	(1.81)	(1.23)
Log pseudolikelihood	-2738	-805	-906	-311
Observations	2890	789	2890	789

Values are coefficients for ordered probit model, while values are marginal effect for probit model. Numbers in parentheses are z-statistics calculated using robust standard errors clustered in the prefecture. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. In all estimations, year dummies were included as independent variables. In estimations of Probit model, constant was also included. But they were not reported because of space limitations.

Table 10. Regression estimation where the dependent variable is ESEX with the interaction term between SMOK and MALE

	Ordered probit model		Probit model	
	Married people	Unmarried people	Married people	Unmarried people
	(1)	(2)	(3)	(4)
SMOK* MALE	-0.03	-0.27*	-0.01	-0.04
	(-0.30)	(-1.68)	(-0.69)	(-1.22)
SMOK	0.18**	0.31**	0.06***	0.07**
	(2.45)	(2.39)	(2.97)	(2.50)
MALE	0.16***	0.19**	0.02*	0.05*
	(2.73)	(2.18)	(1.87)	(1.70)
Log pseudolikelihood	-2738	-804	-906	-311
Observations	2890	789	2890	789

Values are coefficients for ordered probit model, while values are marginal effect for probit model. Numbers in parentheses are z-statistics calculated using robust standard errors clustered in the prefecture. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. In all estimations, independent variables used in Table 7 are included. In estimations of Probit model, constant was also included. But they were not reported because of space limitations.