Male and Female Happiness in Japan during the 2000s:
Trends during Era of Promotion of Active Participation by Women in Society

by

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Abstract

Female happiness has been paradoxically declining over recent decades in reverse proportion to expanding opportunities in developed countries, but it has been not explored in Japan. Using JGSS, we found that Japanese females have been slightly happier in both absolute and relative terms to males in the 2000s. While happiness of males aged 35-49 and 65 and over temporarily declined in the first half of the decade, females in age groups 20-34 and 65 and over gained happiness in the second half. Moreover, life satisfaction is similar in economic aspects, slightly advantageous to males in marriage, and largely advantageous to females in non-market and non-family aspects.

JEL codes: I31

Key words: happiness, life satisfaction, gender, Japan, JGSS, 2000s.

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1. **Introduction**

   This paper explores a decade-long trend in male and female happiness in Japan since 2000, motivated by the "paradox" that Stevenson and Wolfers (2009) observed in most developed countries: female happiness has *declined* over decades in reverse proportion to increasing autonomy and expanding opportunities for women. We examine the development of happiness by gender in Japan which has not yet been explored and was not covered by Stevenson and Wolfers (2009). We intend to contribute to the literature by providing new quantitative evidence on a gender gap in happiness in Japan using an internationally comparable GSS-type dataset. The evidence from Japan is expected to be informative to researchers and policy makers internationally and inside Japan where the government is now aggressively pushing women's active participation in the economy and society.

   Stevenson and Wolfers (2009) showed that women's happiness has sharply declined since the early 1970s while men's happiness changed very little over those decades. As a result, women experienced an absolute and relative decline in happiness. Moreover, the relative decline in female well-being is also observed across a variety of datasets and well-being measures as well as demographic groups and industrialized countries (except western Germany). The revealed decline in female happiness is counter-intuitive and surprising. By many objective measures, it is evident that women have disproportionally gained autonomy both inside and outside the family over these decades and the lives of women have improved several areas including higher educational attainment than that of men, stronger fertility control, less time spent on housework, as well as labor market outcomes such as a shrinking gender wage gap and a rising labor force participation rate. In other words, the decline in female happiness

contrasts to the prevailing expectation and thus constitutes a paradox.

Japan, too, witnessed similar and significant societal changes shifting the focus from men to women, particularly in the 2000s during which time women clearly became better off. The female high school enrollment ratio surpassed that of males in the mid-1970s, reaching 97 percent in 2000. While the university enrollment ratio is 45.8 percent for females in 2012 and lower than that of males (55.6 percent), the gap has been rapidly shrinking from 16.0 percent in 2000 to 9.8 percent in 2012. While there is little direct data on voice regarding birth control in Japan, the divorce rate (per 1,000 persons) increased rapidly from 1.28 in 1990 to 2.1 in 2000 and has remained at around 2.0 during the 2000s, suggesting stronger bargaining power held by women with a continuous moderate decline in the marriage rate. Time spent on housework declined particularly for females aged 30-54, rendering the gender gap smaller; specifically, for females aged 35-39, the average time spent each week on housework was reduced by 40 minutes from 3 hours 33 minutes to 2 hours 53 minutes between 2001 and 2011.

Women's active involvement is also clearly enhanced in the job market as well. The proportion of the average scheduled wage for female regular workers relative to males increased from 65.5 percent in 2000 to 71.3 percent in 2013. Although the female labor force participation rate declined slightly due to population aging from 49.3 percent to 48.9 percent between 2000 and 2013, the labor force participation of younger females increased dramatically from 57.1 percent to 70.1 percent for females aged 30-34, and from 69.9 percent to 79.0 percent for females aged 25-29.[1]

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[1] The data sources are, Ministry of Education, Culture, Sports, Science and Technology "School Basic Survey" (various years) for school enrollment ratio; Ministry of Health, Labour and Welfare "Vital statistics" for divorce rate; Ministry of Internal Affairs and Communications "Survey on Time Use and Leisure Activities" for time spent on housework; Ministry of Health, Labour and Welfare "Basic Survey on Wage Structure" for scheduled wages; Ministry of Internal Affairs and

Concurrent with women's disproportional emergence, the Japanese government has intensively promoted active participation by women in the economy to both revitalize the current economy and abbreviate the declining labor force population in the future (Cabinet Office (2013)). Female-oriented policies for Japan are also supported by policy recommendations from international organizations (e.g., OECD (2012)).[2]

These significant societal changes including expanding opportunities for women plausibly predispose us to assume that females are more likely to be happy in Japan. However, some studies exploring the pattern of subjective well-being, not only Stevenson and Wolfers (2009) but also Blanchflower and Osward (2004), showed this inference is not supported by empirical evidence in other countries. Blanchflower and Oswald (2004) showed that, while women in the US and the UK were happier than men over the last quarter of the previous century, the trend in white women's happiness in the US was negative over the same period.[3] To the best of our knowledge, there has been no research to explore the trend in happiness by gender over a longer horizon in Japan.[4] This study utilizes the JGSS (Japanese version of General Sociology Survey),

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Communications "Labor Force Survey" for labor force participation rate.

[2] For example, the Japan Revitalization Strategy (approved June 14, 2013) states "it is essential for the 'power of women'—Japan's greatest potential which has not been leveraged fully to date—to be fully utilized…..Therefore, the Government will aim to raise the women's labor participation rate to the world's highest level." However, the evidence on the causal relationship of female participation to firm performance has been relatively unsupported. Mitsuyama and Shimizutani (2013) showed the stock market did not respond to the announcement of a collection of 17 firms designated "Nadeshiko Brand" companies considered to encourage women's involvement in business among the companies listed on the Tokyo Stock Exchange.

[3] Those two studies are among a few exceptions that examined long-term trends in happiness *per se*. Bertrand (2010) argued the "paradox" from a broader scope of gender. Herbst (2011) used a different dataset from Stevenson and Wolfers (2009) to show that men and women experienced a similar reduction in life satisfaction and comparable decline in self-confidence and health as well as growing regrets about the past between 1985 and 2005. Moreover, she showed male wellbeing began to fall more rapidly than female well-being in recent years.

[4] Tiefenbach and Kohlbacher (2014) examined changes in happiness before and after the Great East Japan Earthquake and found that there is no significant nationwide drop in happiness after the disaster but there is a spatial effect indicating that respondents living in closer proximity to Fukushima prefecture are less happy.

the Japanese counterpart of GSS used in Stevenson and Wolfers (2009), and performs a comparative analysis by following their empirical procedure so as to put the findings in this study into an international perspective.

This study is comprised of the following sections. Section 2 explains the dataset. Section 3 previews the trends in happiness by male and female categories and Section 4 examines the happiness trends by gender and subgroups. Section 5 explores the trends in life satisfaction in a variety of domains. The last section concludes.

2. Data description

This study uses individual-level data from the Japanese General Social Surveys (JGSS). The JGSS project was launched in 1998 and started data collection in 2000 followed by subsequent rounds continuously implemented in 2001, 2002, 2003, 2005, 2006, 2008, and 2010. We use all surveys in this study and pool the samples together.[5]

While the survey design varies slightly each year, the basic feature of the JGSS is maintained throughout all rounds. The individuals in the sample consist of men and women aged between 20 and 89 as of September 1st in each survey year. They were randomly selected using a stratified two-stage sampling; first, survey locations were selected based on regional blocks and population size of cities nationwide. Then, hundreds of survey points were designated and approximately 15 individuals were selected in each area based on voting registrars. The survey was conducted by an outside survey agency through a combination of interviews and self-administered

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[5] As of March 2014, the JGSS data up to the 2010 survey is publicly made available to researchers. The original General Social Surveys (GSS) have been conducted since 1972 on a nationwide basis. While Stevenson and Wolfers (2009) used several datasets to confirm their findings, to our best knowledge, the JGSS is the only data in Japan that collects self-rated happiness in a consistent way over a long period and whose micro-data is available to general researchers.

(leave-behind) questionnaires. Note that the sample design is cross-sectional, not longitudinal, and we cannot track the same person over multiple years. Between years 2000 and 2005, the sample size was approximately 5,000 and then increased to 9,000 in the 2010 survey. The response rate was 50-60 percent depending on survey year. Starting from the 2003 survey, two types of self-administered questionnaires were provided and half of each type was randomly assigned to each half of the subjects.

The JGSS questionnaire covers a wide variety of questions. While slightly adjusted from survey to survey, the core questions asked in every survey include basic personal attributes (sex, age, educational attainment, etc.), occupations, household composition including information on parents and children, individual and household-level income as well as personal attitudes, basic values, and behavioral patterns. Some of those variables were also requested for spouses.[6]

We pooled the individuals in the JGSS sample between 2000 and 2010. The self-rated happiness question is consistently asked in self-administered questionnaires in every survey. Note, however, that since 2003, the question is included in only one of the two types of self-administered questionnaires which are randomly assigned to each respondent. To capture the level of satisfaction as a whole, the wording of the happiness question is a direct "Are you happy?" inquiry. Respondents are asked to rate their happiness on a five point scale from 1 (happy) to 5 (unhappy). In what follows, the value 1 is assigned to "very happy," 2 to "relatively happy," 3 to "neither happy nor

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[6] The JGSS data is frequently used in academic papers. There are some studies that used the JGSS to explore determinants of happiness in marriage. Lee and Ono (2008) used JGSS to show that the specialization model describes well marital happiness in Japan; women are happier if they are specialized in the household and they have a higher household income. Oshio, Nozaki and Kobayashi (2013) also examined the association of marital satisfaction with division of labor in the household and found that Japanese couples were supportive of traditional specialization partly because Japanese wives are flexible in shifting their efforts between market work and housework through part-time working.

unhappy" (not particularly happy or unhappy), 4 to "relatively unhappy," and 5 to "very

unhappy." Note that the order of the scale is reversed in the regression so that we

understand the results easily. The wording of the questions and answer choices in the

JGSS and GSS differ slightly from each other. In the GSS, used by Stevenson and

Wolfers (2009), the corresponding question is "Taken all together, how would you say

things are these days; would you say that you are very happy, pretty happy, or not too

happy?"

Figure 1 illustrates the development of happiness by gender in the JGSS using

raw (unweighted) data. First, the proportion reporting "very happy" was 27.3 percent

for males and 31.0 percent for females in 2000. For males, the proportion declined

slightly in the first half of the 2000s and recovered to the initial level in the second half,

reaching 28.6 percent in 2010, a 1.3 percent increase during the decade. For females, the

proportion increased once in 2001 but declined until 2005 and recovered afterwards to

34.3 percent in 2010, a 3.3 percent increase during the decade. Overall, the proportion

of males and females moves in parallel and female happiness has always exceeded male

happiness. Second, we note that the proportion reporting "very happy" or "relatively

happy" tracks largely the same pattern as the "very happy" proportion, though the

proportion was at the same level in 2000 and males once caught up with females again

in 2006. The proportion increased from 61.5 percent to 63.0 percent for males between

2000 and 2010 and from 61.8 percent to 67.7 percent for females, showing the gender

gap slightly widening during the decade. Third, the proportion to report "very unhappy"

or "relatively unhappy" increased slightly from 6.5 percent in the first half of the 2000s

for males, returning to the initial level in 2010. The proportion of "unhappy" females

was consistently below that of "unhappy" males between 2000 and 2010.

These observations are summarized as follows. First, female happiness improved slightly between 2000 and 2010 in absolute terms. Second, male happiness declined slightly in the first half of the 2000s and recovered in the second half. As a result, females have been happier than males in relative terms, too, during the decade; this is especially the case for the "very happy" proportion. Third, the proportion of "unhappy" persons remained level with a slightly larger number of males throughout the decade.

The happiness trend that was revealed in Figure 1 contrasts to Stevenson and Wolfers (2009). It might be tempting to conclude that Japanese females are happier between 2000 and 2010 both absolutely and relatively to males. However, it is too early to conclude that Japan has no "paradox" since we need to scrutinize the trend by regression analysis controlling for a variety of individual attributes. That is what we proceed to do below using the sampling weights given in the dataset.

3. Happiness trends by gender

This section performs a formal regression analysis to quantify the happiness trends by gender. The basic specification follows Stevenson and Wolfers (2009) described as follows.

$$Happiness_{i,t} = \alpha + \sum_{t=2001}^{2010} \beta_t \cdot Female_i \cdot Year_t + \sum_{t=2001}^{2010} \gamma_t \cdot Male_i \cdot Year_t +$$

$$\delta \cdot Female_i + e_{i,t}$$

(1)

where i denotes an individual in the sample and t stands for the year in which the individual was surveyed (2001, 2002, 2003, 2005, 2006, 2008, and 2010). The

dependent variable is a variety of happiness index, which is explained below. The explanatory variables include an indicator to stand for women (*Female*), interaction terms between a dummy for females and dummies for each year (*Female*Year*) and interaction terms between a dummy for males and dummies for each year (*Male*Year*). Contrasting to Stevenson and Wolfers (2009) which used a linear time trend to capture long-term trends in happiness, we use seven year dummies because the JGSS is not available in some years between 2001 and 2010 (i.e., 2004, 2007 and 2009) and because year dummies can capture any changes in the happiness trends more flexibly than assuming a linear time trend. The last term is a well-behaved error term.

In what follows, we add two types of control variables. One is a set of dummies for each age group (each 10 years from age 20 and 70 and over) to capture compositional shifts in the population and the other is socioeconomic controls to reflect life choices such as employment status, marital status, equivalent household income, educational attainment, number of children ever born, parents' educational attainment, and region (prefectures) all of which are interacted with gender to allow the association with happiness to differ for men and women.[7] The summary statistics of these variables by gender are shown in Appendix Table. The socioeconomic control variables are

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[7] The choice of control variables resembles Stevenson and Wolfers (2009). Employment status includes indicators for (1) those who worked last week on a full-time basis, (2) those who worked last week on a part time basis, (3) those who were self-employed (including family workers), (4) those who worked last week but the status is unknown, (5) those who were absent from work last week, (6) those who were unemployed, (7) those who were retired, (8) those who were a student, (9) those who were a homemaker, and (10) those who were not at work due to illness or other reasons. Marital status includes indicators for (1) married, (2) separated (widowed or divorced), (3) never married. Household equivalent income is a quartic in log household income per equivalent (1 + 0.5 (other adults) + 0.3 kids) deflated by the aggregate CPI index. Educational attainment (both for respondent and parents) includes indicator variables for (1) junior high school graduates (compulsory education only), (2) senior high school graduates, (3) two-year college graduates, and (4) graduates of university or higher degree. Number of children ever born includes indicators for each number up to seven and eight or more. Religion is not included since it seems to be less relevant in Japan. Regions include indicators for each of the 47 prefectures. In addition, separate dummy variables are also included for missing values of each control variable.

clearly not exogenous (e.g., happy persons are more likely to be married) and we need to be cautious in interpreting the results. However, we added those controls, which have frequently been included in past research, to reflect the relationship of societal changes over a long period with levels of happiness in some specifications in Tables 1 and 2. Our purpose does not focus on the extent of these associations (although they are interesting) but to capture the happiness trends controlling for those changes over time. Indeed, we confirm that the estimated gender gap in happiness is not affected even if they are included on the right hand side.

Table 1 reports the estimation results.[8] The first three columns show the results using OLS estimation and the dependent variable is an indicator that takes one (1) if a respondent reported to be "very happy" (scale 1) and takes zero (0) otherwise. The first column without any additional controls shows that female happiness was significantly higher than male happiness in 2000 by 3.8 percent (the coefficient on the female dummy) and the coefficients on the interaction terms for females are positive and significant in several years (2001, 2006, 2008, and 2010), showing that females were happier in the second half of the 2000s. On the other hand, there is no significant coefficient on the interaction terms for males, showing that male happiness did not significantly change during the 2000s. It should be noted that the sign of the coefficients for males is negative in the first half and positive in the second half. The gender gap in the happiness trend, which is defined as the difference in the coefficient on the interaction terms between the female dummy and the 2010 dummy and that between the male dummy and 2010 dummy, is not statistically significant.[9] These patterns are not

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[8] Robust standard errors are used. We do not cluster them by year since we use year dummies in the estimation.
[9] Except for year 2010, the difference in the coefficients between females and males and the

changed even if we control for age groups (Column (2)) and socioeconomic status (Column (3)).

The three columns in the middle (Column (4)-(6)) report the results by replacing the dependent variable to an indicator to take one (1) if a respondent reported being "very happy" or "relatively happy" and zero (0) otherwise. We see a pattern similar to that found in Columns (1)-(3) for females, adding that the coefficients on the interaction term in 2005 are now positive and significant. On the other hand, the coefficients on the interaction terms for males are negative and significant in 2001 and 2003, showing that male happiness declined in those years compared with 2000. The gender gap in the happiness trend is positive and significant; the proportion of "happy" females is larger than that of happy males by 6 percentage points in relative terms.

The last three columns (Columns (7)-(9)) report the results by replacing the dependent variable to an indicator to take one (1) if a respondent reported being "very unhappy" or "relatively unhappy" and zero (0) otherwise. While we see some positive and significant coefficients for females in 2003 in Columns (7) and (8) and males in 2001 (and 2005 in Column (8)), we observe that most of the coefficients are not statistically significant. These patterns show that the proportion of unhappy individuals increased temporarily in some years in the first half of the 2000s but did not change over the decade and the gender gap is not significant in all three regressions.

Table 2 shows the estimation results using different estimation methods. The first three columns report the coefficients obtained by ordered probit estimation. Note that the order of the scale is reversed in the estimation: 1=very unhappy to 5=very happy. The trend for females is virtually the same as that found in Table 1: females gained

statistical test are not reported to save space but they are available upon request from the authors.

happiness in some years relative to 2000 that are concentrated in the second half of the 2000s. The male trend is also similar to that in Table 1 but some of the coefficients are now negative and significant (2003 in Column (1)-(3) and 2001 in Columns (2) and (3) and 2005 in Column (2)). As a result, the gender gap in the happiness trend that is captured in the difference in 2010 is positive for all columns and significant in Columns (2) and (3).

The middle columns (Column (4)-(6)) show the estimation results by replacing the dependent variable with a standardized scale by subtracting the mean and dividing by the standard deviation and estimated by OLS. The patterns in the coefficients are very similar to those in Column (1)-(3) for females and they are negative and significant for males in 2001 and 2003 (Columns (4)-(6)), showing that male happiness declined in those years compared with 2000. The gender gap in 2010 is positive and significant in Column (5).

The last three columns (Column (7)-(9)) show the empirical results using probit estimation. When the dependent variable is an indicator taking one (1) for "very happy" persons (Column (7)), the pattern is the same as in Columns (1) and (4). If the dependent variable is an indicator taking one (1) for "very happy" or "relatively happy" persons (Column (8)), the difference in the gender gap becomes more evident: the coefficients are positive and significant for females from 2005 to 2010 and negative and significant for males in 2001 and 2003. The sign of the coefficients was negative between 2001and 2005 but positive since 2006 (and significant in 2006). When the dependent variable is an indicator taking one (1) for "very unhappy" or "relatively unhappy" persons (Column (9)), most of the coefficients are not statistically significant.

In sum, the happiness trends using regressions conform to the observations in the

previous section. Female happiness generally leveled off in the first half of the 2000s and slightly improved in the second half in absolute terms. Second, male happiness declined slightly (significantly in some cases) in the first half of the 2000s and recovered in the second half. As a result, females have been happier relative to men, too. There is no significant change in the proportion of "unhappy" persons. Although there are some minor differences across the choice of the dependent variable or estimation method, the basic pattern is not altered and contrasts with Stevenson and Wolfers (2009).[10]

4. Happiness trend by subgroup

This section examines the happiness trend by gender in a variety of subgroups since the happiness pattern may differ between them. The basic specification used in this section is the same as (1) in Section 3 but is slightly changed to allow the difference in gender gap across different groups. To save space, we report the results omitting age groups and socioeconomic variables, but the basic pattern in the estimated coefficients is not largely altered even if adding those variables on the right hand side.

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[10] In the U.S., the "second shift" argument insists that women's participation in market work is not accompanied by a shift away from housework, resulting in more burden and costs borne by women. However, Aguiar and Hurst (2007) showed that this assertion is not empirically supported; the increased working time for women was offset by a large decline in their non-market work and men reduced their working hours and increased time spent on home production. The trends in time spent on working and homemaking is similar in the U.S. and Japan.

$$Happiness_{i,j,t} = \alpha + \sum_{t=2001}^{2010} \sum_{j=1}^{N} \beta 1_{j,t} \cdot Female_i \cdot Category_j \cdot Year_t$$

$$+ \sum_{t=2001}^{2010} \sum_{j=1}^{N} \beta 2_{j,t} \cdot Male_i \cdot Category_j \cdot Year_t$$

$$+ \sum_{j=1}^{N-1} \gamma 1_j \cdot Category_j + \sum_{j=1}^{N} \gamma 2_j \cdot Female_i \cdot Category_j + e_{i,j,t}$$

(2)

The notations follow the basic specification (1). Now we include indicators to stand for each subgroup in the regression. The number of category (*N*) ranges from 2 to 4 depending on subgroup. The coefficients are obtained by ordered probit estimation.

Table 3 reports the estimated coefficients on the interaction terms between gender dummies and each year dummy. Panel A shows those coefficients by age group which indeed express important differences. First, the coefficients for females aged 20-34 are positive and significant in 2001 and 2005-2010 and those for males aged 20-34 are positive but not significant. The gender gap in the happiness trend (the coefficient for women minus the coefficient for men in each year) is positive but not significant except for year 2005. In other words, for age 20-34, only female happiness rose significantly in the second half of the 2000s but there is no significant gender gap. Second, the coefficients for females aged 35-49 are positive in all years and significant in 2001 and 2005 while the coefficients for males in this age group are negative in all years and significant in 2002. As a result, the gender difference is always positive and significant in the first half of the 2000s (2001, 2002, and 2005). Third, the coefficients for females aged 50-64 are not significant and negative in 2002-2005, indicating a trend different

from that of younger generations. In contrast, the coefficients for males are positive until 2005, and some coefficients are significant in the second half of the 2000s. The gender gap is not significant but it is negative in 2005, 2006, and 2008, implying that male happiness improved relative to female happiness. Put differently, for those aged 50-64, both male and female happiness declined in the first half of the decade and recovered in the second half. While the recovery is significant for males, the gender gap is not significant. Fourth, for those aged 65 and over, the coefficients for females are negative in the first half of the decade and positive in the second half, and some of them are significant. In contrast, male happiness declined significantly in the first half in the same manner as males aged 35-49 and modestly recovered in the second half (although it was not significant). Thus, the gender gap is significant in 2001 and 2008. Therefore, for those aged 65 and over, female happiness declined (but not significantly) and male happiness declined significantly in the first half while female happiness rose significantly in 2008 and 2010 and male happiness modestly recovered. Thus, the gender gap is significantly observed in both periods.

In sum, the trends in happiness depend on both gender and age. In general, female happiness rose among the younger generations, particularly those aged 20-34 and older generations at the end of the decade while male happiness declined for those aged 35-49 and 65 and over.

Table 3 Panel B shows the coefficients by marital status. Since the divorced and the widowed are merged in the 2000-2003 period, marital status consists of three categories (married, separated (divorced and widowed), and never married). The pattern of the coefficients for females is similar across these categories with some variations. For females, the coefficients are close to zero (0) in the first half of the 2000s, except

the positive and significant coefficients for married females in 2001, and they are positive and significant in 2008 and 2010 for married and never married females (2006 and 2010 for separated females). On the other hand, the pattern of the coefficients for males is similar between those married and never married, and negative in the first half of the decade and positive in the second half with significant coefficients in 2001 and 2003 for married males. In contrast, the coefficients are negative in all years for separated males, indicating that they are less likely to report being happy. The gender gap is always positive and not significant excepting year 2005 for separated or never married males.

Table 3 Panel C compares the coefficients for the subgroups with or without living children. For females, the coefficients are positive and significant in 2008 and 2010 both with and without living children. In addition, the coefficients for females without living children are positive and significant in 2005 and 2006 and the size of the coefficients are larger in 2008 and 2010 than females with children, showing that female happiness rose higher if they were without living children. In contrast, the presence of living children does not seem to affect male happiness except for negative and significant effects on males with children in 2001 and without children in 2005. The gender gap is positive in all years and significant for the case of those without living children in some of the years.

Table 3 Panel D compares the coefficients between the employed and the not-employed. This comparison requires special attention since greater opportunities for females than in the past typically mean that women are more likely to be involved in market work. For females, the coefficients are positive except in year 2003 and significant in 2005 and 2008 if employed. In contrast, the coefficients for females are

negative in 2002-2005 but positive and significant in 2006, 2008, and 2010 if not employed, and the size of the coefficients is larger than those for employed females. This observation shows that employed females did not gain happiness to a greater extent than not-employed females during the decade. On the other hand, the employment status does not significantly affect male happiness excepting a significant decline in 2002 if employed and 2003 if not employed. The gender gap is generally positive and significant in 2005 if employed and in 2001 if not employed. Thus, we see that employed females are not necessarily happier than not-employed females and that the rise in happiness for females not employed is absolutely and relatively advantageous to that of males, if we focus on the end of the decade.

Table 3 Panel E shows the coefficients by educational attainment. For females, the coefficients are not significant for junior high school graduates but are significant in 2008 and 2010 for senior high school graduates. Most of them are positive and significant for two-year college graduates throughout the decade and positive but not significant for university graduates, showing that two-year college graduates are more likely to report being happy in the 2000s as senior high school and university graduates are likely to report at the end of the decade. In contrast, most of the coefficients are not significant for males except for junior high school graduates in 2001 (negative) and 2005 (positive). The gender gap is generally positive but most of the results are not statistically significant.

In sum, we see some variation in the decade's happiness trends across subgroups. In general, females in several categories gained happiness significantly during the 2000s but changes in the male happiness trends are not significant in most cases. Younger females gain happiness (particularly females aged 20-34) and males lose happiness in

middle age (35-49) and older (65 and over), which contributes to expanding the gender gap in happiness. While there cannot be seen a clear difference in the happiness trends across marital status (separated male happiness declined but not significantly), females without living children are more likely to report to be happy. Females seem to gain happiness whether employed or not employed, but we need to note that employed females are not necessarily happier than not-employed females. Finally, two-year college female graduates are happier in the 2000s while there is no clear change for males regardless of educational attainment.

5. Life satisfaction trends in a variety of domains

Next, we examine the trends of subjective well-being in a variety of domains so that we can explore the background to happiness trend by gender. While we do not intend to directly link happiness and life satisfaction in each domain, it is useful to confirm whether the happiness trend is associated with measures of satisfaction in a positive or negative way or whether it is unassociated. The JGSS has a battery of questionnaires on life satisfaction and asks the respondents to rate their degree of satisfaction in terms of living area, leisure, family, household budget, friends, health, and current job throughout 2000-2010 as well as marriage life (2000-2002), and spouse (2003-2010). Since the JGSS contains these questions in both self-administered questionnaires, the number of individuals who respond to the life satisfaction questions is larger than that of the happiness question which is contained in only one of the two self-administered questionnaires. We use Specification (1) in Section 3 employing an ordered probit model to explore the trends in life satisfaction in the same manner as the

happiness trend that is reported in Column (1) of Table 2.[11]

Table 4 reports the estimated coefficient. First, the coefficients for satisfaction with living area (Panel A) are positive and significant since 2005 for both sexes, showing both females and males are more likely to be satisfied with their residential areas from the mid-2000s. The size of the coefficients is generally larger for females but the gender gap is not significant except for year 2005.[12] Second, the coefficients for satisfaction with leisure (Panel B) are positive and significant for females in most years in the 2000s as some of them are in the second half for males, resulting in a significant gender gap over the decade. Third, the coefficients for satisfaction with family (Panel C) are negative in 2001-2002 but positive and significant since 2003 for females. These figures are similar to males except for year 2003. It is interesting to see that the gender gap is negative in the second half (and significant in 2006), indicating that male satisfaction with family rose more than that of females. Fourth, the coefficients for satisfaction with household budget (Panel D) are negative in the first half (and significant in 2003 for females and 2002 for males) and positive and significant from 2005 for both sexes. The gender gap in regarding satisfaction with the household budget is not significant for all years.

Fifth, the coefficients for satisfaction with friends (Panel E) are positive and significant for females since 2003 while they are generally not significant for males. The gender gap is significant only in 2010. Sixth, the coefficients for satisfaction with health are positive and significant in 2003 and 2008 for both sexes in addition to

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[11] To save space, we report the coefficients without age dummies or socioeconomic controls. The estimation results are not altered even if adding them as explanatory variables.

[12] Oshio and Kobayashi (2011) used JGSS and another dataset to show that individuals living in areas of high inequality are likely to report themselves as less happy. Oshio et al. (2011) used GSS type data in Japan, Korea, and China and showed that income comparisons within the reference group matter for assessing happiness.

females in 2010 and males in 2006. The resultant gender gap is not statistically

significant. Seventh, the question regarding satisfaction with marriage or spouse is not

consistent throughout JGSS 2000-2010. The 2000-2002 surveys asked regarding

satisfaction with marriage life and the 2003-2010 surveys inquired regarding

satisfaction with spouse. While most of the coefficients are not significant, they are

negative and significant for females and positive and significant for males in 2005 and

we see a significant gender gap in that year, indicating males are more likely to be

satisfied with their spouse than are females. Lastly, the coefficients of satisfaction with

the current job (Panel H), which is limited to the respondents that are currently working,

are positive and significant since 2005 for both sexes and the gender gap is not

significant at all. It is interesting to see that the trends in job satisfaction are comparable

between females and males despite the fact that females were encouraged to participate

in the economy more during the decade of 2000-2010 than ever before in addition to the

finding that employed females are not necessarily happier than not-employed females in

the previous section.[13] Moreover, there were no discernible trends between males and

females over the period (and thus no differential trend) in job satisfaction, which is

consistent with Stevenson and Wolfers (2009).

In sum, it seems that life satisfaction rose in favor of females in some aspects

over the decade such as friends or leisure (and slightly in terms of living area) and it

rose in favor of males in terms of spouse (and slightly in terms of family). On the other

hand, the trends in life satisfaction in economic aspects such as household budget or

current job are seen as parallel between females and males. Put differently, female

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[13] While not asked directly of the respondents in the JGSS, Oshio et al. (2010) and Oshio, Umeda
and Kawakami (2013) showed that childhood adversity has a long-term effect on subjective
well-being in adulthood in Japan.

satisfaction showed a higher gain in non-market, non-family aspects in the 2000s than did that of males.

6. Conclusion

This paper examines a decade of trends in male and female happiness in Japan from 2000 using the Japanese version of GSS (JGSS). The starting point of this study is the "paradox" that was discovered by Stevenson and Wolfers (2009), i.e., that female happiness has declined over decades in reverse proportion to increasing autonomy and expanding opportunities for women, and that they now report happiness below that of men, a phenomena common to developed countries except for West Germany. Our findings show that female happiness rose slightly between 2000 and 2010 absolutely and relatively to that reported by males, contrasting to Stevenson and Wolfers (2009). In this sense, the happiness trend in Japan is the same as in West Germany where such a "paradox" is not found. In other words, Japan is the second exception among developed countries in that female happiness did not decline.

By subgroup, a happiness gain over the decade is clearly found for females who are younger, for females without children, and for two-year female college graduates. It should be noted that females are not necessarily happier if employed and the trend in current job satisfaction is comparable with that of males, implying that women's active involvement in market work did not make the females happier, a finding that echoes Stevenson and Wolfer's "paradox." Indeed, over the decade, female life satisfaction was found to rise in non-market, non-family aspects such as leisure or friends.

In contrast, male happiness is in general unchanged over the decade except when it declined in males in middle age (35-49) and older (65 and over). These findings seem

to be consistent with male's the very high rate of male suicide among OECD countries. The suicide rate for Japanese males dramatically increased in the 1990s (especially at the end of the 1990s during the economic depression) as documented in previous literature (e.g., Chen et al. 2009a, 2009b).

This study provides bird-eye view evidence on the decade's trends in happiness by gender in Japan which to date has not been explored in-depth. Further studies should address why the happiness trends differ between Japan and most other developed countries. Some may argue that the "paradox" will emerge in Japan in the future because Japan was a slow starter in terms of societal change in favor of women than other developed countries or because the duration of data collection in the JGSS is relatively shorter and may not yet capture any change in the trends. Our findings that female gains in happiness over the decade did not stem from market work might reinforce the argument since female active participation is now strongly encouraged. It is worth to investigate these arguments which are so far inconclusive and only speculative so as to put the Japanese experience in an international perspective.

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Figure 1 Happiness Trends in Japan
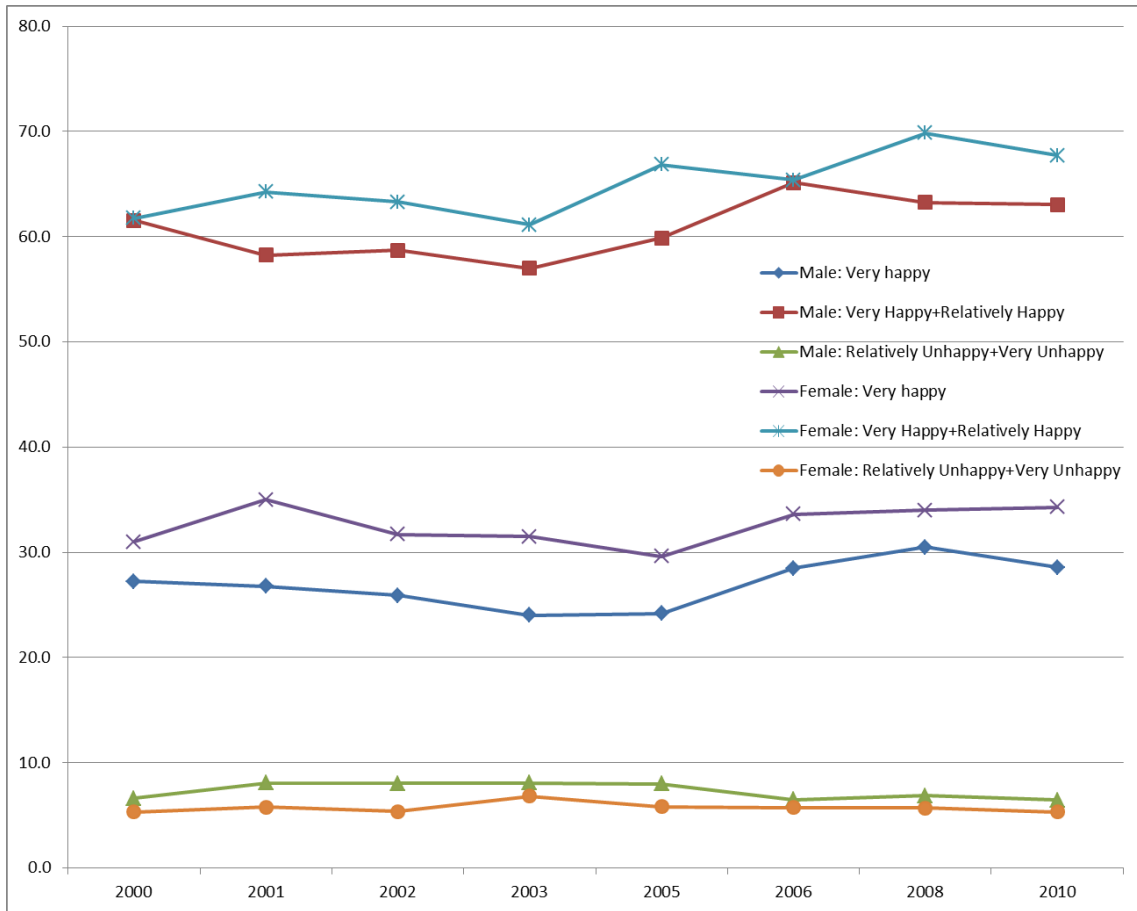
Source: Author's calculation using the JGSS 2000-2010 data.

Table 1 Happiness Trends in Japan by Gender (OLS estimates)

Column	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent variable	1=very happy	1=very happy	1=very happy	1=very happy+happier	1=very happy+happier	1=very happy+happier	1=unhappier	1=unhappier	1=unhappier
	0=otherwise	0=otherwise	0=otherwise	0=otherwise	0=otherwise	0=otherwise	0=otherwise	0=otherwise	0=otherwise
Regression method	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Coefficients									
Female 2001	0.045 ***	0.045 **	0.044 **	0.031 *	0.031 *	0.031 *	0.003	0.003	0.003
	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)	(0.018)	(0.008)	(0.008)	(0.008)
Female 2002	0.005	0.004	0.007	0.018	0.019	0.022	0.001	0.001	-0.001
	(0.017)	(0.017)	(0.017)	(0.018)	(0.018)	(0.018)	(0.008)	(0.008)	(0.008)
Female 2003	0.005	0.003	0.009	-0.002	-0.003	-0.002	0.017 *	0.017 *	0.016
	(0.019)	(0.019)	(0.019)	(0.020)	(0.020)	(0.020)	(0.010)	(0.010)	(0.010)
Female 2005	-0.002	-0.004	0.004	0.064 ***	0.065 ***	0.075 ***	0.007	0.007	0.005
	(0.019)	(0.019)	(0.020)	(0.019)	(0.019)	(0.019)	(0.010)	(0.010)	(0.010)
Female 2006	0.037 *	0.033 *	0.041 **	0.045 **	0.044 **	0.047 **	0.003	0.004	0.005
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.009)	(0.009)	(0.009)
Female 2008	0.039 **	0.035 *	0.046 **	0.081 ***	0.082 ***	0.084 ***	0.002	0.002	0.002
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.009)	(0.009)	(0.009)
Female 2010	0.044 **	0.042 **	0.055 ***	0.064 ***	0.066 ***	0.065 ***	-0.001	0.000	0.00001
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.008)	(0.008)	(0.008)
Male 2001	-0.005	-0.006	-0.006	-0.043 **	-0.043 **	-0.043 **	0.019 *	0.020 *	0.021 *
	(0.018)	(0.018)	(0.018)	(0.021)	(0.021)	(0.020)	(0.011)	(0.011)	(0.011)
Male 2002	-0.012	-0.014	-0.012	-0.030	-0.031	-0.030	0.015	0.016	0.014
	(0.018)	(0.018)	(0.017)	(0.020)	(0.020)	(0.019)	(0.011)	(0.011)	(0.010)
Male 2003	-0.022	-0.024	-0.019	-0.047 **	-0.049 **	-0.042 *	0.018	0.019	0.014
	(0.020)	(0.020)	(0.020)	(0.023)	(0.023)	(0.022)	(0.013)	(0.013)	(0.012)
Male 2005	-0.025	-0.029	-0.023	-0.020	-0.023	-0.013	0.020	0.022 *	0.018
	(0.020)	(0.020)	(0.020)	(0.023)	(0.023)	(0.021)	(0.013)	(0.013)	(0.013)
Male 2006	0.005	0.001	0.002	0.035 *	0.031	0.021	0.000	0.003	0.006
	(0.019)	(0.019)	(0.019)	(0.021)	(0.021)	(0.020)	(0.011)	(0.011)	(0.011)
Male 2008	0.031	0.026	0.030	0.010	0.005	-0.0002	0.002	0.006	0.004
	(0.020)	(0.020)	(0.019)	(0.021)	(0.021)	(0.021)	(0.011)	(0.011)	(0.011)
Male 2010	0.015	0.011	0.021	0.009	0.005	0.010	-0.001	0.002	-0.004
	(0.019)	(0.019)	(0.019)	(0.020)	(0.020)	(0.020)	(0.011)	(0.011)	(0.011)
Female dummy (Difference in 2000)	0.038 **	0.021	NA	0.003	-0.040	NA	-0.015	-0.009	NA
	(0.018)	(0.023)		(0.019)	(0.025)		(0.009)	(0.012)	
Difference in trend (Female 2010-Male 2010)	0.029	0.031	0.034	0.055 **	0.061 **	0.055 **	-0.0003	-0.003	0.004
	(0.026)	(0.026)	(0.026)	(0.027)	(0.027)	(0.027)	(0.014)	(0.014)	(0.014)
Control variable									
Age groups	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Socioeconomic controls	No	No	Yes	No	No	Yes	No	No	Yes

(Note) Robust standard errors are in parentheses. The sample size is 19,815 individuals from JGSS between 2000 and 2010. The dependent variable is (1) an indicator variable to take one if the respondent reported to be very happy and zero otherwise for Columns (1)-(3), (2) an indicator variable to take one if the respondent reported to be very happy or relatively happy and zero otherwise for Columns (4)-(6), or (3) an indicator variable to take one if the respondent reported to be very unhappy or relatively unhappy and zero otherwise for Columns (7)-(9). Age groups are indicator variables for individuals aged 20-29, 30-39, 40-49, 50-59, 60-69 and 70 or over. Socioeconomic controls are as follows: Employment status includes indicators for (1) those who worked last week on a full-time basis, (2) those who worked last week on a part time basis, (3) those who were self-employed (including family workers), (4) those who worked last week but the status is unknown, (5) those who were absent from work last week, (6) those who were unemployed, (7) those who were retired, (8) those who were a student, (9) those who were a homemaker and (10) those who were not at work due to illness or other reasons. Marital status includes indicators for (1) married, (2) widowed or divorced, (3) never married. Household equivalent income is a quartic in log household income per equivalent (1 + 0.5 (other adults) + 0.3 kids) deflated by aggregate CPI index. Educational attainment (both for respondent and parents) includes indicator variables for (1) junior high school graduates (compulsory education only), (2) senior high school graduates, (3) two-year college graduates and (4) graduates of university or higher degree. Number of children ever born include indicators each number up to seven and eight or more. Religion is not included since it seems to be less relevant in Japan. Regions include indicators for each of the 47 prefectures. In addition, separate dummy variables are also included for missing values of each control variable.

Table 2 Happiness Trends in Japan by Gender (Ordered probit and other estimates)

Column	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)	
Dependent variable	5 point scale		5 point scale		5 point scale		5 scale (Z-score)		5 scale (Z-score)		5 scale (Z-score)		1=very happy		1=very happy+relatively happy		1=relatively unhappy+very unhappy	
	(5=very happy)		(5=very happy)		(5=very happy)		(5=most happy)		(5=most happy)		(5=most happy)		0=otherwise		0=otherwise		0=otherwise	
Regression method	Ordered Probit		Ordered Probit		Ordered Probit		OLS		OLS		OLS		Probit		Probit		Probit	
Coefficients																		
Female 2001	0.089	**	0.089	**	0.096	**	0.079	**	0.079	**	0.079	**	0.125	**	0.083	*	0.030	
	(0.041)		(0.041)		(0.042)		(0.037)		(0.037)		(0.036)		(0.049)		(0.048)		(0.077)	
Female 2002	0.029		0.028		0.045		0.029		0.028		0.038		0.015		0.048		0.011	
	(0.039)		(0.039)		(0.041)		(0.036)		(0.036)		(0.036)		(0.049)		(0.047)		(0.077)	
Female 2003	-0.015		-0.019		-0.007		-0.015		-0.018		-0.009		0.015		-0.006		0.142	*
	(0.045)		(0.045)		(0.047)		(0.042)		(0.042)		(0.041)		(0.054)		(0.053)		(0.082)	
Female 2005	0.059		0.058		0.089	*	0.060		0.059		0.080	**	-0.005		0.175	***	0.062	
	(0.044)		(0.044)		(0.046)		(0.040)		(0.040)		(0.041)		(0.055)		(0.053)		(0.084)	
Female 2006	0.090	**	0.086	*	0.102	**	0.081	**	0.077	*	0.085	**	0.102	*	0.120	**	0.030	
	(0.044)		(0.044)		(0.046)		(0.040)		(0.040)		(0.040)		(0.053)		(0.052)		(0.082)	
Female 2008	0.136	***	0.133	***	0.159	***	0.127	***	0.124	***	0.137	***	0.109	**	0.222	***	0.018	
	(0.044)		(0.044)		(0.046)		(0.040)		(0.040)		(0.039)		(0.053)		(0.053)		(0.083)	
Female 2010	0.130	***	0.130	***	0.154	***	0.119	***	0.119	***	0.130	***	0.123	**	0.173	***	-0.007	
	(0.041)		(0.041)		(0.043)		(0.037)		(0.037)		(0.037)		(0.050)		(0.049)		(0.079)	
Male 2001	-0.073		-0.076	*	-0.082	*	-0.072	*	-0.073	*	-0.075	*	-0.015		-0.110	**	0.134	*
	(0.045)		(0.045)		(0.045)		(0.043)		(0.043)		(0.040)		(0.056)		(0.053)		(0.078)	
Male 2002	-0.062		-0.067		-0.061		-0.059		-0.063		-0.056		-0.038		-0.077		0.107	
	(0.043)		(0.043)		(0.043)		(0.041)		(0.041)		(0.038)		(0.055)		(0.052)		(0.076)	
Male 2003	-0.097	*	-0.104	**	-0.085	*	-0.093	*	-0.098	**	-0.079	*	-0.069		-0.121	**	0.124	
	(0.050)		(0.050)		(0.049)		(0.048)		(0.048)		(0.044)		(0.064)		(0.059)		(0.089)	
Male 2005	-0.072		-0.082	*	-0.061		-0.067		-0.076		-0.054		-0.079		-0.051		0.137	
	(0.049)		(0.049)		(0.048)		(0.047)		(0.047)		(0.043)		(0.063)		(0.060)		(0.087)	
Male 2006	0.051		0.041		0.027		0.051		0.042		0.026		0.014		0.092	*	0.004	
	(0.045)		(0.045)		(0.046)		(0.042)		(0.042)		(0.040)		(0.058)		(0.056)		(0.084)	
Male 2008	0.047		0.030		0.034		0.041		0.025		0.027		0.092		0.027		0.015	
	(0.047)		(0.047)		(0.048)		(0.044)		(0.044)		(0.042)		(0.058)		(0.056)		(0.084)	
Male 2010	0.033		0.021		0.049		0.031		0.020		0.044		0.045		0.023		-0.004	
	(0.045)		(0.045)		(0.046)		(0.042)		(0.042)		(0.040)		(0.056)		(0.054)		(0.082)	
Female dummy	0.072	*	0.016		NA		0.065	*	-0.006		NA		0.112	**	0.009		-0.128	
(Difference in 2000)	(0.041)		(0.058)				(0.039)		(0.050)				(0.052)		(0.050)		(0.078)	
Difference in trend	0.097		0.109	*	0.105	*	0.088		0.099	*	0.086		0.078		0.151	**	-0.003	
(Female 2010-Male 2010)	(0.061)		(0.061)		(0.062)		(0.056)		(0.056)		(0.055)		(0.075)		(0.073)		(0.114)	
Control variable																		
Age groups	No		Yes		Yes		No		Yes		Yes		No		No		No	
Socioeconomic controls	No		No		Yes		No		No		Yes		No		No		No	

(Note) Robust standard errors are in parentheses. The sample size is 19,815 individuals from JGSS between 2000 and 2010. The specidication is Equation (1) in the text. The dependent variable is (A) five point scale of self-rated happiness (1=very unhappy to 5=very happy) for Columns (1)-(3), (B) standardized 5 point scale for Columns (4)-(6), or (C) an indicator variable to take one if the respondent reported to be very happy (Column (7)), very happy or relatively happy (Column (8)), or very unhappy happy or relatively unhappy and zero otherwise for Columns (7)-(9). Age groups are indicator variables for individuals aged 20-29, 30-39, 40-49, 50-59, 60-69 and 70 or over, respectively. Socioeconomic controls are as follows: Employment status includes indicators for (1) those who worked last week on a full-time basis, (2) those who worked last week on a part time basis, (3) those who were self-employed (including family workers), (4) those who worked last week but the status is unknown, (5) those who were absent from work last week, (6) those who were unemployed, (7) those who were retired, (8) those who were a student, (9) those who were a homemaker and (10) those who were not at work due to illness or other reasons. Marital status includes indicators for (1) married, (2) widowed or divorced, (3) never married. Household equivalent income is a quartic in log household income per equivalent (1 + 0.5 (other adults) + 0.3 kids) deflated by aggregate CPI index. Educational attainment (both for respondent and parents) includes indicator variables for (1) junior high school graduates (compulsory education only), (2) senior high school graduates, (3) two-year college graduates and (4) graduates of university or higher degree. Number of children ever born include indicators each number up to seven and eight or more. Religion is not included since it seems to be less relevant in Japan. Regions include indicators for each of the 47 prefectures. In addition, separate dummy variables are also included for missing values of each control variable.

Table 3 Happiness Trends by Subgroup

Column		(1)	(2)	(3)			(4)	(5)	(6)
		Women	Men	Difference			Women	Men	Difference
Panel A: Age group (N=19,185)					Panel B: Marital status (N=19,185)				
Age 20-34	2001	0.206 ** (0.093)	0.055 (0.097)	0.151 (0.134)	Married	2001	0.118 ** (0.049)	-0.086 * (0.051)	0.204 *** (0.071)
	2002	0.109 (0.088)	0.043 (0.094)	0.066 (0.128)		2002	0.006 (0.048)	-0.067 (0.049)	0.073 (0.069)
	2003	0.128 (0.105)	0.058 (0.111)	0.070 (0.153)		2003	0.008 (0.053)	-0.116 ** (0.056)	0.124 (0.077)
	2005	0.224 ** (0.097)	-0.025 (0.116)	0.249 * (0.151)		2005	0.006 (0.052)	-0.042 (0.053)	0.048 (0.075)
	2006	0.339 *** (0.099)	0.131 (0.100)	0.208 (0.140)		2006	0.039 (0.053)	0.019 (0.050)	0.019 (0.073)
	2008	0.205 ** (0.100)	-0.001 (0.110)	0.205 (0.149)		2008	0.128 ** (0.052)	0.052 (0.053)	0.076 (0.074)
	2010	0.272 *** (0.093)	0.151 (0.106)	0.121 (0.141)		2010	0.093 * (0.050)	0.017 (0.049)	0.076 (0.070)
Age 35-49	2001	0.150 * (0.079)	-0.150 (0.092)	0.299 ** (0.122)	Separated	2001	-0.068 (0.102)	-0.118 (0.214)	0.051 (0.237)
	2002	0.069 (0.074)	-0.158 * (0.086)	0.227 ** (0.114)		2002	0.096 (0.102)	-0.015 (0.204)	0.111 (0.229)
	2003	0.013 (0.085)	-0.152 (0.101)	0.165 (0.132)		2003	-0.123 (0.115)	-0.227 (0.234)	0.104 (0.261)
	2005	0.156 * (0.087)	-0.099 (0.094)	0.255 ** (0.128)		2005	0.136 (0.114)	-0.346 * (0.201)	0.482 ** (0.231)
	2006	0.000 (0.080)	-0.108 (0.086)	0.108 (0.118)		2006	0.236 * (0.122)	-0.121 (0.210)	0.357 (0.243)
	2008	0.119 (0.081)	-0.078 (0.093)	0.197 (0.123)		2008	0.132 (0.116)	-0.176 (0.228)	0.308 (0.256)
	2010	0.061 (0.076)	-0.023 (0.085)	0.085 (0.114)		2010	0.222 ** (0.105)	-0.091 (0.200)	0.313 (0.226)
Age 50-64	2001	0.016 (0.073)	-0.023 (0.075)	0.039 (0.104)	Never married	2001	0.126 (0.113)	-0.065 (0.101)	0.191 (0.152)
	2002	-0.022 (0.071)	-0.108 (0.072)	0.086 (0.101)		2002	0.049 (0.103)	-0.103 (0.093)	0.152 (0.139)
	2003	-0.088 (0.079)	-0.113 (0.088)	0.025 (0.119)		2003	-0.001 (0.130)	-0.070 (0.113)	0.070 (0.172)
	2005	-0.080 (0.077)	-0.063 (0.085)	-0.018 (0.115)		2005	0.210 * (0.125)	-0.095 (0.113)	0.305 * (0.169)
	2006	0.006 (0.079)	0.152 * (0.079)	-0.146 (0.112)		2006	0.160 (0.112)	0.113 (0.104)	0.047 (0.153)
	2008	0.044 (0.078)	0.133 * (0.081)	-0.089 (0.112)		2008	0.208 * (0.118)	0.010 (0.105)	0.198 (0.158)
	2010	0.037 (0.075)	0.034 (0.077)	0.002 (0.107)		2010	0.202 * (0.110)	0.083 (0.106)	0.119 (0.153)
Age 65-	2001	-0.016 (0.083)	-0.236 ** (0.092)	0.220 * (0.124)					
	2002	-0.044 (0.082)	-0.024 (0.091)	-0.020 (0.123)					
	2003	-0.126 (0.091)	-0.233 ** (0.095)	0.107 (0.132)					
	2005	-0.049 (0.091)	-0.147 (0.095)	0.098 (0.132)					
	2006	0.025 (0.094)	-0.018 (0.093)	0.043 (0.132)					
	2008	0.168 * (0.093)	0.041 (0.096)	0.127 (0.133)					
	2010	0.159 * (0.087)	-0.093 (0.090)	0.252 ** (0.125)					

(Note) The coefficients are obtained using ordered probit model and robust standard errors are in parentheses. The sample is pooled from JGSS 2000-2010 and the sample size slightly differs across panels since we excluded the individuals whose category information is missing (N shows the number of respondents in each category). The specification is Equation (2) in the text. The dependent variable is a five point scale of self-rated happiness (1=very unhappy to 5=very happy).

Table 3 Happiness Trends by Subgroup (continued)

Column	(1) Women		(2) Men		(3) Difference	
Panel C: Child status (N=19,065)						
Living children 2001	0.067		-0.094	*	0.161	**
	(0.046)		(0.051)		(0.069)	
2002	0.015		-0.040		0.055	
	(0.045)		(0.050)		(0.067)	
2003	-0.014		-0.093		0.079	
	(0.050)		(0.057)		(0.076)	
2005	0.016		-0.030		0.046	
	(0.049)		(0.055)		(0.073)	
2006	0.058		0.040		0.018	
	(0.050)		(0.051)		(0.072)	
2008	0.106	**	0.034		0.072	
	(0.049)		(0.054)		(0.073)	
2010	0.087	*	0.015		0.072	
	(0.046)		(0.051)		(0.069)	
No children 2001	0.170	*	-0.029		0.199	
	(0.093)		(0.089)		(0.128)	
2002	0.101		-0.126		0.227	*
	(0.087)		(0.084)		(0.121)	
2003	-0.026		-0.132		0.106	
	(0.106)		(0.098)		(0.144)	
2005	0.210	**	-0.196	**	0.406	***
	(0.103)		(0.099)		(0.143)	
2006	0.196	**	0.035		0.161	
	(0.097)		(0.090)		(0.132)	
2008	0.241	**	0.040		0.201	
	(0.099)		(0.092)		(0.135)	
2010	0.278	***	0.048		0.230	*
	(0.092)		(0.090)		(0.129)	
Panel D: Employment status (N=19,185)						
Employed 2001	0.087		-0.059		0.147	*
	(0.056)		(0.051)		(0.076)	
2002	0.069		-0.087	*	0.156	**
	(0.053)		(0.049)		(0.072)	
2003	-0.017		-0.049		0.032	
	(0.063)		(0.056)		(0.084)	
2005	0.106	*	-0.056		0.162	**
	(0.059)		(0.056)		(0.082)	
2006	0.019		0.037		-0.018	
	(0.059)		(0.050)		(0.077)	
2008	0.111	*	0.020		0.091	
	(0.059)		(0.053)		(0.079)	
2010	0.077		0.067		0.010	
	(0.053)		(0.050)		(0.073)	
Not employed 2001	0.076		-0.127		0.203	*
	(0.060)		(0.097)		(0.114)	
2002	-0.025		0.032		-0.057	
	(0.059)		(0.095)		(0.112)	
2003	-0.029		-0.235	**	0.206	
	(0.065)		(0.108)		(0.127)	
2005	-0.002		-0.115		0.113	
	(0.066)		(0.106)		(0.125)	
2006	0.144	**	0.103		0.041	
	(0.065)		(0.102)		(0.121)	
2008	0.155	**	0.147		0.008	
	(0.066)		(0.102)		(0.122)	
2010	0.188	***	-0.039		0.227	*
	(0.064)		(0.098)		(0.117)	

Column	(4) Women		(5) Men		(6) Difference	
Panel E: Educational attainment (N=19,055)						
Junior high school 2001	-0.029		-0.217	**	0.188	
	(0.084)		(0.097)		(0.128)	
2002	-0.124		-0.130		0.006	
	(0.081)		(0.097)		(0.126)	
2003	-0.112		-0.134		0.023	
	(0.096)		(0.106)		(0.143)	
2005	-0.046		-0.132		0.086	
	(0.103)		(0.107)		(0.149)	
2006	0.060		0.212	**	-0.152	
	(0.105)		(0.106)		(0.149)	
2008	-0.074		0.107		-0.181	
	(0.108)		(0.116)		(0.158)	
2010	0.048		0.015		0.033	
	(0.098)		(0.108)		(0.146)	
Senior high school 2001	0.087		-0.095		0.182	**
	(0.061)		(0.070)		(0.093)	
2002	0.051		-0.085		0.136	
	(0.058)		(0.067)		(0.088)	
2003	-0.035		-0.075		0.040	
	(0.065)		(0.078)		(0.102)	
2005	0.014		-0.055		0.069	
	(0.064)		(0.076)		(0.099)	
2006	0.055		0.016		0.039	
	(0.063)		(0.070)		(0.094)	
2008	0.148	**	0.024		0.124	
	(0.063)		(0.072)		(0.096)	
2010	0.125	**	-0.005		0.130	
	(0.061)		(0.069)		(0.092)	
Two-year college 2001	0.206	**	-0.142		0.348	
	(0.093)		(0.197)		(0.218)	
2002	0.204	**	0.094		0.110	
	(0.092)		(0.165)		(0.189)	
2003	0.105		0.009		0.096	
	(0.110)		(0.179)		(0.210)	
2005	0.196	**	-0.287		0.483	**
	(0.096)		(0.189)		(0.212)	
2006	0.170	*	0.152		0.018	
	(0.101)		(0.183)		(0.209)	
2008	0.246	**	0.221		0.025	
	(0.095)		(0.180)		(0.203)	
2010	0.083		0.215		-0.132	
	(0.089)		(0.165)		(0.187)	
University 2001	0.140		0.050		0.090	
	(0.125)		(0.080)		(0.148)	
2002	-0.009		-0.038		0.029	
	(0.120)		(0.078)		(0.143)	
2003	0.011		-0.123		0.134	
	(0.133)		(0.096)		(0.164)	
2005	0.203		-0.032		0.236	
	(0.128)		(0.092)		(0.157)	
2006	0.160		-0.023		0.183	
	(0.125)		(0.078)		(0.148)	
2008	0.175		-0.014		0.190	
	(0.125)		(0.084)		(0.150)	
2010	0.286	**	0.025		0.261	*
	(0.114)		(0.080)		(0.139)	

(Note) The coefficients are obtained using ordered probit model and robust standard errors are in parentheses. The sample is pooled from JGSS 2000-2010 and the sample size slightly differs across panels since we excluded the individuals whose category information is missing or not applicable (N shows the number of respondents in each category). The specification is Equation (2) in the text. The dependent variable is a five point scale of self-rated happiness (1=very unhappy to 5=very happy).

Table 4 Life Satisfaction in each Domain

Column	(1) Women		(2) Men		(3) Difference	
Panel A: Are you satisfied with living area? 5 point scale (N=27,512)						
2001	-0.040		-0.058		0.019	
	(0.040)		(0.044)		(0.060)	
2002	-0.015		-0.033		0.018	
	(0.040)		(0.042)		(0.058)	
2003	0.016		0.013		0.003	
	(0.037)		(0.042)		(0.056)	
2005	0.215	***	0.085	*	0.130	*
	(0.045)		(0.049)		(0.066)	
2006	0.126	***	0.135	***	-0.009	
	(0.037)		(0.039)		(0.053)	
2008	0.198	***	0.164	***	0.034	
	(0.036)		(0.038)		(0.053)	
2010	0.212	***	0.171	***	0.042	
	(0.035)		(0.038)		(0.052)	
Panel B: Are you satisfied with leisure? 5 point scale (N=27,424)						
2001	0.063		-0.053		0.117	**
	(0.040)		(0.042)		(0.058)	
2002	0.072	*	-0.058		0.130	**
	(0.040)		(0.041)		(0.058)	
2003	0.113	***	0.034		0.079	
	(0.038)		(0.041)		(0.056)	
2005	0.133	***	0.022		0.111	*
	(0.045)		(0.048)		(0.065)	
2006	0.178	***	0.132	***	0.046	
	(0.037)		(0.038)		(0.053)	
2008	0.204	***	0.108	***	0.097	*
	(0.037)		(0.038)		(0.053)	
2010	0.199	***	0.110	***	0.088	*
	(0.036)		(0.037)		(0.051)	
Panel C: Are you satisfied with family? 5 point scale (N=27,463)						
2001	-0.034		-0.035		0.001	
	(0.040)		(0.042)		(0.058)	
2002	-0.009		-0.046		0.037	
	(0.039)		(0.040)		(0.056)	
2003	0.065	*	0.061		0.004	
	(0.037)		(0.041)		(0.055)	
2005	0.140	***	0.192	***	-0.052	
	(0.045)		(0.049)		(0.067)	
2006	0.127	***	0.238	***	-0.111	**
	(0.037)		(0.038)		(0.053)	
2008	0.197	***	0.211	***	-0.014	
	(0.037)		(0.038)		(0.053)	
2010	0.196	***	0.210	***	-0.014	
	(0.036)		(0.037)		(0.051)	
Panel D: Are you satisfied with household budget? 5 point scale (N=27,456)						
2001	-0.057		-0.046		-0.011	
	(0.039)		(0.040)		(0.056)	
2002	-0.052		-0.093	**	0.041	
	(0.038)		(0.040)		(0.055)	
2003	-0.067	*	-0.044		-0.023	
	(0.037)		(0.039)		(0.054)	
2005	0.113	**	0.080	*	0.033	
	(0.045)		(0.048)		(0.066)	
2006	0.135	***	0.158	***	-0.023	
	(0.036)		(0.037)		(0.052)	
2008	0.154	***	0.093	**	0.061	
	(0.036)		(0.037)		(0.052)	
2010	0.143	***	0.087	**	0.056	
	(0.035)		(0.036)		(0.050)	

(Note) The coefficients are obtained using ordered probit model and robust standard errors are in parentheses. The sample is pooled from JGSS 2000-2010. The specification is Equation (1) in the text. The dependent variable is a five point scale of self-rated satisfaction (1=very unsatisfied to 5=very satisfied).

Table 4 Life Satisfaction in each Domain (continued)

Column	(1)		(2)		(3)	
	Women		Men		Difference	
Panel E: Are you satisfied with friends? 5 point scale (N=27,478)						
2001	-0.012		0.005		-0.017	
	(0.042)		(0.043)		(0.060)	
2002	-0.010		-0.017		0.006	
	(0.041)		(0.041)		(0.058)	
2003	0.072	*	0.037		0.035	
	(0.039)		(0.041)		(0.057)	
2005	0.091	*	0.080		0.011	
	(0.047)		(0.049)		(0.068)	
2006	0.097	**	0.100	***	-0.003	
	(0.038)		(0.038)		(0.054)	
2008	0.108	***	0.051		0.057	
	(0.038)		(0.038)		(0.054)	
2010	0.161	***	0.059		0.103	**
	(0.037)		(0.037)		(0.052)	
Panel F: Are you satisfied with health? 5 point scale (N=27,541)						
2001	0.036		0.024		0.013	
	(0.041)		(0.042)		(0.059)	
2002	-0.032		-0.002		-0.030	
	(0.039)		(0.041)		(0.057)	
2003	0.083	**	0.121	***	-0.039	
	(0.038)		(0.041)		(0.055)	
2005	-0.003		0.039		-0.042	
	(0.044)		(0.049)		(0.066)	
2006	0.052		0.065	*	-0.013	
	(0.036)		(0.037)		(0.051)	
2008	0.075	**	0.110	***	-0.035	
	(0.036)		(0.038)		(0.052)	
2010	0.062	*	0.040		0.021	
	(0.035)		(0.037)		(0.051)	
Panel G1: Are you satisfied with spouse? 5 point scale (N=13,816)						
2005	-0.026		0.085		-0.111	
	0.052		0.055		0.076	
2006	-0.069	*	0.071	*	-0.141	**
	0.042		0.043		0.060	
2008	-0.024		0.041		-0.065	
	0.042		0.043		0.060	
2010	-0.037		0.050		-0.087	
	0.040		0.042		0.058	
Panel G2: Are you satisfied with marriage life? 5 point scale (N=6,258)						
2001	0.113	**	0.007		0.106	
	0.050		0.050		0.071	
2002	0.059		0.172	***	-0.113	
	0.049		0.049		0.070	
Panel H: Are you satisfied with current job? 5 point scale (N=17,083)						
2001	0.003		0.059		-0.056	
	(0.052)		(0.050)		(0.072)	
2002	0.082		-0.004		0.086	
	(0.050)		(0.050)		(0.071)	
2003	0.023		0.041		-0.018	
	(0.050)		(0.049)		(0.070)	
2005	0.119	**	0.112	*	0.007	
	(0.058)		(0.059)		(0.083)	
2006	0.114	**	0.120	***	-0.006	
	(0.048)		(0.045)		(0.066)	
2008	0.184	***	0.080	*	0.104	
	(0.047)		(0.044)		(0.065)	
2010	0.165	***	0.118	***	0.047	
	(0.045)		(0.044)		(0.063)	

(Note) The coefficients are obtained using ordered probit model and robust standard errors are in parentheses. The sample is pooled from JGSS 2000-2010 (2003-2010 for Panel G1 and 2000-2002 for Panel G2). The specification is Equation (1) in the text. The dependent variable is five point scale of self-rated satisfaction (1=very unsatisfied to 5=very satisfied).

Appendix Table Summary Statistics

Variables	Male		Female	
	Mean	S.D.	Mean	S.D.
(A) Age group				
Age 20-29	0.114	0.317	0.107	0.309
Age 30-39	0.144	0.351	0.159	0.366
Age 40-49	0.161	0.367	0.171	0.377
Age 50-59	0.211	0.408	0.203	0.403
Age 60-69	0.207	0.406	0.184	0.388
Age 70 and over	0.163	0.369	0.175	0.380
(B-1) Education (respondent)				
Junior high school graduates	0.213	0.410	0.221	0.415
Senior high school graduates	0.432	0.495	0.482	0.500
Two-year college school graduates	0.068	0.251	0.183	0.387
University graduates	0.281	0.450	0.107	0.309
Missing	0.006	0.074	0.008	0.087
(B-2) Education (father)				
Junior high school graduates	0.447	0.497	0.409	0.492
Senior high school graduates	0.238	0.426	0.240	0.427
Two-year college school graduates	0.034	0.181	0.044	0.205
University graduates	0.086	0.281	0.088	0.284
Missing	0.195	0.396	0.219	0.414
(B-3) Education (father)				
Junior high school graduates	0.454	0.498	0.430	0.495
Senior high school graduates	0.290	0.454	0.306	0.461
Two-year college school graduates	0.041	0.199	0.049	0.216
University graduates	0.021	0.145	0.019	0.136
Missing	0.193	0.395	0.197	0.398
(C) Employment				
(1) Worked last week on a full time basis	0.520	0.500	0.195	0.396
(2) Worked last week on a part time basis	0.064	0.245	0.211	0.408
(3) Worked last week and self-employed	0.137	0.344	0.094	0.293
(4) Worked last week (status unknown)	0.011	0.103	0.007	0.086
(5) Absent from work last week.	0.009	0.093	0.010	0.102
(6) Not worked last week (unemployed)	0.029	0.168	0.012	0.107
(7) Not worked last week (retired)	0.168	0.374	0.021	0.143
(8) Not worked last week (student)	0.007	0.084	0.006	0.078
(9) Not worked last week (housemaker)	0.008	0.090	0.391	0.488
(10) Not worked last week (ill and others)	0.033	0.179	0.034	0.182
(11) Not worked last week (status unknown)	0.014	0.117	0.018	0.131
(D) Marital status				
Married	0.772	0.420	0.703	0.457
Separated (divorced or widowed)	0.056	0.229	0.170	0.375
Never married	0.172	0.378	0.127	0.333
Missing	0.000	0.000	0.000	0.014
(E) Number of children ever born				
0	0.241	0.428	0.188	0.391
1	0.133	0.339	0.138	0.345
2	0.407	0.491	0.427	0.495
3	0.184	0.387	0.197	0.398
4	0.026	0.159	0.035	0.183
5	0.005	0.073	0.009	0.093
6	0.001	0.030	0.003	0.053
7	0.001	0.024	0.001	0.029
8-10	0.000	0.018	0.000	0.022
Missing	0.002	0.044	0.002	0.045
(F) Eqvvalent household income				
Log (real household income per capita)	3.976	2.591	3.429	2.726
Missing (indicator)	0.285	0.452	0.372	0.483
Number of Observations	8,845		10,340	

(Source) Author's calculation using the JGSS 2000-2010. The summary statistics for region (47 prefectures) are omitted to save space.