The effects of information asymmetry and government size on happiness: A case study from Japan

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Abstract. This paper uses individual-level data from Japan (2003) to examine the effects of government size and the disclosure of official government information on happiness. The major findings are as follows. (1) Disclosure of official information is positively associated with the happiness of workers, but not with that of non-workers. (2) Government size has a positive effect on the happiness of non-workers, but not with that of workers. Therefore, information asymmetry between government and citizens is thought to reduce the happiness of those who bear the cost of public service but does not affect the happiness of public service beneficiaries.

Keywords: Life satisfaction; Government size; Trust; Growth
JEL classification: I31, H50 H11

1. Introduction

Since the early 1990s, happiness research has been of major importance in the fields of economics and political economics (Di Tella et al., 2003; Frey & Stutzer, 2002; Scoppa & Ponzo, 2008). The numerous studies attempting to explore happiness have considered factors such as various political institutions as well as evaluating economic factors (Frey & Stutzer, 2000; Bjørnskov et al., 2010). It is widely acknowledged that government has a critical influence on social welfare[1]. There are, however, two conflicting views on the outcomes of government activities. First, from the viewpoint of neo-classical economics, government is considered to play an important role in alleviating market failure. Politicians are the agents of the citizens and they should therefore make an effort to serve the citizens' welfare. In an ideal polity, where principal (citizen) and agent (politician) share the same information, perfect competition among politicians drives 'political profit' to zero. Political competitive pressure can be considered similar to competitive pressure in the market, leading to an increase in citizens' happiness. For instance, government provides the public goods that meet citizens' desires but cannot be provided by private suppliers in the market. Consequently, citizens are likely to feel happy due to the provision of public goods by government. Under political pressure, government size is anticipated to be optimal and maximize citizens' happiness; for instance, Kotakapri and Laamanen (2010) used Finnish data and found that high expenditure in public health care has a positive influence on citizens' life satisfaction.

Second, the public choice theory is considered a promising method for analyzing the relationship between government size and happiness (Frey & Stutzer, 2010)[2]. Politicians and bureaucrats are assumed to be mainly self-serving. In real conditions, the cost of acquiring information regarding government activity is very high. As a consequence, citizens are unable to adequately obtain official government information concerning, for instance, the cost function of public goods. Therefore, there is information asymmetry between citizens and politicians. Under this condition, politicians aim to maximize their re-election probability by favoring small special interest groups rather than by maximizing the citizens' welfare. Thus, citizens lacking information cannot criticize the government for not fulfilling the policy to maximize citizens' welfare. In contrast, bureaucrats have an incentive to expand budgets for the purpose of increasing their prestige and power (Niskanen, 1971). As a consequence,

[1] These studies examine how public sectors affect the happiness of citizens (Helliwell, J.F., 2006; Helliwell & Huang, 2008;Layard, 2006).

[2] Bureaucratic rent and decentralization are considered to be determinants of life satisfaction (Luechinger et al., 2006; Bjørnskov et al., 2008 b).

government size becomes larger than the optimal size that would benefit a country's citizens. Therefore, government size is thought to be negatively associated with citizens' happiness. Bjørnskov et al. (2007) used cross-country data to show that government size decreases life satisfaction, supporting the public choice view[3].

Since the 1990s, local government ordinances regarding the disclosure of official government information have been in operation in some areas of Japan. Thus, citizens can obtain local government official information if they request its disclosure. As a consequence, information asymmetry between local government and citizens has decreased in localities where the ordinance was enacted. However, some local governments have not enacted these ordinances and so the degree of information asymmetry varies between local governments. Japanese General Social Surveys (JGSS) include a question regarding respondents' place of residence and degree of happiness, and are therefore able to match individual-level JGSS data with localities that enacted the disclosure of official government information ordinance, as well as local government size. Accordingly, this data enables the examination of the degree of information asymmetry and local government size, and their effect on citizens' happiness[4].

The remainder of this paper is organized as follows. Features of Japanese local government are briefly reviewed in Section 2. Section 3 explains the data and methods used. Section 4 discusses the results of the estimations. The final section offers concluding observations.

2. Review of information disclosure and hypothesis

2.1. Disclosure of official government information ordinance

The disclosure of the official information ordinance was enacted in the late 1990s to ensure government accountability in certain municipalities (Jiyukokuminsha, 2009). This ordinance guarantees the right to access information held by the municipality. Under this ordinance, a municipality is obliged to disclose information if a citizen requests its disclosure. For instance, the process to appoint a supplier of public services can be disclosed. Citizens now can, and do, investigate possible collusion between politicians, bureaucrats, and private firms, and obtain information regarding the cost

[3] Di Tella & MacCulloch (2005) do not believe there is any association between government size and happiness after controlling for unobserved fixed effects for each country.

[4] A number of previous studies link individual happiness (or life satisfaction) and conditions in the respondents' country (Alesina et al., 2004; Bjørnskov et al., 2008a; 2008b; Helliwell, 2003). Hessami (2010) links municipal level data to individual happiness using Finnish data.

functions of public goods. A municipality is the lowest level of local government. In 2003, there were 3,213 municipalities in Japan's 47 prefectures[5]; approximately 68 municipalities per prefecture. The rate of municipalities instituting a disclosure of official information ordinance is increasing rapidly, with approximately 89% of ordinances introduced in 2003[6].

2.2. Testable hypothesis

The amount of information collected by government for administrative purposes is distinctly greater than that available to citizens. Such information asymmetry between government and citizens strongly tempts politicians and bureaucrats to place higher priority on their own profit than on citizens' welfare, resulting in various undesired outcomes for society as a whole. Disclosure of official information ordinances reduces the cost of acquiring information regarding government activities. Enactment of the ordinances appears to have alleviated the information asymmetry between government and citizens, enabling citizens to know how and the extent to which public spending is used to increase benefits for them. Once citizens can access the information, they are likely to criticize the policy for advancing politicians' and bureaucrats' self-interest. Therefore, budget allocations have become more efficient, resulting in an increase in citizens' welfare. Citizens are usually interested in the extent to which they can enjoy public services, and they are also interested in whether the supply of public services is conducted fairly. Both policy outcomes and procedural utility appear to have an influence on citizens' happiness (Frey & Stutzer, 2005). It is very important that people are treated with equality by government (Dworkin, 1977). Inevitably, selective public services, which are provided to individuals only after an individual needs test (but this test is not sufficiently open), are problematic from the viewpoint of procedural justice (Kumlin and Rothestein, 2005). Thus, information asymmetry exists between government and individuals, leaving bureaucrats to use their discretion in the allocation of test-based programs. Consequently, the selection process is under suspicion of cheating, arbitrariness, favoritism, and discrimination. For instance, government provides unemployment relief at the expense of workers via income redistribution. However, unemployment relief induces individuals to have incentive to become the unemployed. In these circumstances, the right to request the disclosure of official

[5] A Japanese prefecture is roughly the equivalent of a state within the United States or a province in Canada.
[6] See http://www.soumu.go.jp/menu_news/s-news/2008/080801_1.html (accessed August 10, 2010).

government information that has not been concealed reduces citizens' suspicions regarding the selection process. Therefore, apart from those who are selected to enjoy public services, citizens will feel happy because of the right to request disclosure of official government information. These considerations lead to the advancement of Hypothesis 1.

Hypothesis 1: Disclosure of government information is positively related to the happiness of workers but not of non-workers.

Governments can alleviate economic inequality among citizens via income redistribution. Therefore, low-income earners are the main beneficiaries under a large government (Hessami, 2010). The living standards of non-workers can be improved by the redistribution of wealth, making non-workers feel happier at the expense of the workers' burden. In contrast, workers are less likely to be beneficiaries. A beneficiary of a public service, such as a non-worker, is thought to enjoy government activities even if government size is greater than the optimal size for society as a whole. Nevertheless, in regard to workers, the benefit of a large government does not outweigh the cost. Accordingly, there might be no positive association between government size and workers' happiness. Thus, Hypothesis 2 is as follows.

Hypothesis 2: Government size is positively related to the happiness of non-workers but not of workers.

3. Data and method

3.1. Data

This paper uses individual-level JGSS data. JGSS surveys adopted a two-step stratified sampling method and were conducted throughout Japan in 2003. JGSS was designed as the Japanese counterpart to the General Social Survey in the United States. The survey asked standard questions regarding the characteristics of individuals and their families via face-to-face interviews. The data provides information related to prefecture of residence, marital and demographic (age and gender) status, level of household income, years of schooling, occupation, and degree of happiness[7].

[7] The Japanese General Social Surveys (JGSS) are designed and conducted at the Institute of Regional Studies at Osaka University of Commerce, in collaboration with the Institute of Social Science at the University of Tokyo, under the direction of Ichiro TANIOKA, Michio NITTA, Hiroki SATO, Noriko IWAI, and with Minae OSAWA as

The survey collected data from 1,957 adults aged between 20 and 89 years. This paper deals with the various individual characteristics noted above. Some respondents did not respond to all questions and so the observations used for the estimations were reduced. As shown in Table 2, the total sample size of both non-workers and workers used for the estimations was 1,291. When the respondents were restricted to those aged between 25 and 65 years, the size of the sample was reduced to 956. The non-workers sample size of 536 was reduced to 267 respondents, which implies that many respondents did not have work because they were retired. The variables used for regression estimations are shown in Table 1. Table 1 columns (1), (2), (3), and (4) report simple averages, standard deviations, maximum values, minimum values, respectively, using all samples. Columns (5) and (6) show simple averages using the workers sample and non-workers sample, respectively. The average years of schooling for the workers sample was 12.6, which is greater than that for the non-workers; this indicates that people who are highly educated are more likely to work. The average age for workers was 47 years, approximately 13 years less than that of non-workers. This result reflects the fact that non-workers also include retired people. Interestingly, the result for marital status is almost identical between workers and non-workers.

<Insert Table 1 here>

As a crucial dependent variable of happiness, all respondents were asked, "Are you happy?". The possible responses to this question ranged from 1 (unhappy) to 5 (happy). Figure 1 presents the distribution of the degree of happiness and shows that the most common response was 3. A distinctly larger number of respondents answered '5 (happy)' than answered '1 (unhappy)'.

<Insert Figure 1 here>

As explained above, data regarding respondents' prefectures of residence were available, enabling individual-level data to be matched with prefecture level data. The prefecture level data used in this paper includes the number of municipalities that enacted the disclosure of official government information ordinance, government size, and Gini coefficients. The degree of disclosure of government information is measured

project manager. The project is financially assisted by a Gakujutsu Frontier Grant from the Japanese Ministry of Education, Culture, Sports, Science, and Technology for the 2000–2003 academic years, and the datasets are compiled and distributed by SSJ Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, the University of Tokyo.

by the number of municipalities enacting the disclosure ordinance in each prefecture. This number is calculated using data provided by the Statistics Bureau of the Ministry of Internal Affairs and Communications[8]. JGSS does not provide information regarding the municipality where respondents reside, so respondents' happiness cannot be matched with their municipality. Therefore, it is impossible to examine directly whether the enactment of the disclosure ordinance can influence individual happiness. It is for this reason that a second approach was employed, using the number of municipalities enacting the ordinance as a proxy for the degree of information asymmetry between local government and citizens. The Gini coefficients for income from 1999 were sourced from the Statistics Bureau of the Ministry of Internal Affairs and Communications[9]. Government size was measured using government expenditure and GDP (Government expenditure/GDP) sourced from the Asahi Shimbun newspaper (2008).

3.2. Methods

In line with the discussion above, the estimated function of trust takes the following form:

$$HAPPY_{ip} = \alpha_1 DISCINF_p + \alpha_2 GOVSIZE_p + \alpha_3 GINI_p + \alpha_4 MARRY_{ip} + \alpha_5 MALE_{ip} + \alpha_6 INCOM_{ip} + \alpha_7 EDU_{ip} + \alpha_8 AGE_{ip} + \alpha_9 WORK_{ip} + \varepsilon_{ip},$$

where HAPPY represents the degree of happiness from 1 (unhappy) to 5 (happy) for individual i and in prefecture p; α's represent the regression parameters; and ε_{ip} represents the error term. The definitions of variables are shown in Table 1. Theoretically, because of the ordinal nature of the dependent variables, an Ordered Probit analysis would be appropriate (Greene, 1997, CH19). Thus, Ordered Probit analysis has been used previously in the literature to examine the determinants of satisfaction (e.g., Di Tella et al., 2003; Easterlin, 2006; Shields et al., 2009), and is also used in this paper to examine the determinants of happiness.

The effects of key variables in examining Hypotheses 1 and 2 are as follows: Hypothesis 1 created an expectation that the coefficient sign of DISCINF will be positive for workers but not for non-workers. In contrast, Hypothesis 2 anticipated that the coefficient sign of GOVSCAL is positive for non-workers but not for workers.

Control variables similar to those used in previous studies on happiness or life

[8] The number calculated as (municipalities that enacted the disclosure of official government information ordinance) / (All municipalities).

[9] Gini data at the prefecture level are obtained every five years; as 2003 data is not available, data from1999 was used.

satisfaction have been included, and are as follows. Economic factors are captured by incorporating INCOM and GINI as independent variables[10]. INCOM is included to empirically test the presumption derived from the traditional economic theory that individuals gain satisfaction from income. However, the income effect on happiness remains open to question because some empirical estimations have suggested that income level does not improve happiness due to changes in aspiration levels (Easterlin, 1995; Frey & Stutzer, 2002). In the United States and European countries, income inequality influences the degree of happiness (Alesina et al., 2004).

Human capital is considered to increase income. If this holds true, human capital will improve happiness. However, as suggested previously, income level is already controlled. Therefore, EDU should be interpreted as capturing the impact of human capital on happiness via other channels. For instance, under the same constraints, more educated individuals seem to consume goods with greater efficiency because they can more easily access useful information, which is why the anticipated sign of EDU is positive. Further, following earlier literature (e.g., Bjørnskov et al., 2008a, 2008b, Hessami, 2010), AGE, MARRY, and WORK were included as control variables.

4. Results

Results of the Ordered Probit estimations are shown in Tables 2(a), 2(b), and 3. With the exception of Table 2(b), each table shows the estimation results based on the sample using all observations in column (1). The error terms for respondents living in the same prefecture may correlate because various conditions, such as economic policy, are shared. Thus, the standard errors of the coefficients may have a downward bias (Moulton, 1990). To control for this bias, robust standard errors were calculated by clustering the prefecture feature. z-values were then obtained using cluster–robust standard errors.

After dividing the total sample into workers and non-workers, estimations were conducted to compare workers with non-workers regarding the effects of government size on happiness. The results for non-workers are shown in column (2) and those for workers are in column (3). As pointed out in the previous section, the average age of workers was approximately 13 years less than that of non-workers. Thus, the difference

[10] In JGSS, individuals are asked to place themselves into 1 of 19 income groups according to annual household income. In this study, it is turned into a continuous income measure by using the midpoint of each income interval. The highest income group is beyond 23 million yen. To not lose the observations belonging to this group, the lower bound for this group was used, that is, 23 million yen. To alleviate the measurement error, estimations were also conducted using dummy household incomes, and these results are similar to those using continuous variables.

in regression results between workers and non-workers may be in part because of a generation effect that occurs when regression estimations are conducted separately for workers and non-workers. To mitigate this effect, the sample age was restricted to those aged between 25 and 65 years and the additional estimations were conducted using this sample. The results of all observations of those aged between 25 and 65 years appear in column (4). Results of workers and non-workers aged between 25 and 60 years appear in columns (5) and (6), respectively.

Tables 2(a) and 3 present a base line model where INCOM, EDU, and AGE are included as continuous variables[11]. Table 2(a) uses HAPPY as a dependent variable, with a range of 1 to 5. Among these 5 responses, "3" should call for careful interpretation because it may include a number of respondents who could have answered in other categories if other possible responses were included in the questionnaire. To alleviate any bias arising from this, an alternative proxy for happiness was defined as follows. Values of "3" were considered "neutral" and were omitted, so HAPPY values became 1, 2, 4, and 5. Further, "4" and "5" were changed to "3" and "4", resulting in a range for HAPPY as a dependent variable of 1 to 4, as shown in Table 3.

When the coefficient takes a positive sign, the positive change in the independent variable decreases the probability of the lower ranked outcome and increases the probability of the highest ranked outcome. However, "The marginal effects of the regressors on the probability are not equal to the coefficients" (Greene, 1997; p. 927). Accordingly, this highlights the difficulty in interpreting coefficients. Instead of coefficients, marginal effects can be calculated for each category of dependent variables (Greene, 1997; pp. 927–931). Thus, for a closer examination of the estimation results, as presented in Table 2(b), the marginal effects of key variables are also reported. For example, DISCINF and GOVSIZE in Prob (*HAPPY* = 1), Prob (*HAPPY* = 2), Prob (*HAPPY* = 3), Prob (*HAPPY* = 4), and Prob (*HAPPY* = 5)[12].

The interpretation of the results for DISCINF and GOVSIZE begin first in Table 2(a), and then in Table 2(b). DISCINF produces a positive sign but is not statistically significant in column (1). After dividing the sample into workers and non-workers, as shown in column (2), DISCINF yields a positive sign for workers, being statistically

[11] For a robustness check, estimations of alternative specification were also conducted where INCOM, EDU, and AGE were included as dummy variables. Their results are similar to the results reported in Tables 2(a) and 3. The results are not exhibited in this paper owing to a lack of space. However, the results are available upon request.

[12] The marginal effects of estimations reported in Table 3 are not reported owing to a lack of space. However, they are available upon request.

significant at the 1% level. In contrast, DISCINF yields a negative sign for non-workers despite being statistically insignificant. The results of all samples and workers samples do not change when the respondents' ages are between 25 and 65 years, but DISCINF yields a positive sign for non-workers. These results imply that the disclosure of official government information increases workers' happiness while it has no effect on the happiness of non-workers. With regard to GOVSIZE, its signs are positive in all estimations. Columns (1)–(3) show that GOVSIZE yields positive signs and is statistically significant for both workers and non-workers. However, column (5) indicates that GOVSIZE becomes insignificant for workers when the sample is restricted. It can be argued that these results show that larger governments result in the increase of non-workers' happiness but do not influence the happiness of workers. Table 2(b) offers a closer examination of the effects of DISCINF and GOVSIZE. Panels (I), (II), and (III) report the marginal effects of DISCINF and GOVSIZE for columns (4), (5) and (6), respectively, of Table 2(a). Due to a lack of space, the marginal effects of DISCINF and GOVSIZE are shown only with regard to columns (1)–(3) of Table 2(a). With respect to workers, shown in panel (II), DISCINF is statistically significant in all categories. Further, values for DISCINF were –0.02 and 0.35 in the categories "Unhappy" and "Happy", respectively. This implies that a 1% increase in the rate of the disclosure of official government information leads to a reduction in the probability of being "Unhappy" by 0.02 percentage points and an increase in the probability of being "Happy" by 0.35 percentage points. It is surprising that the marginal effects of DISCINF regarding the increase of "Happy" people is approximately 17 times larger than for the decrease of "unhappy" people. It follows from this result that the disclosure of government information makes a distinctly greater contribution to increasing the probability that people become happy than to decreasing the probability that people become unhappy. GOVSIZE was not statistically significant in any category. Regarding non-workers, panel (III) shows that DISCINF is not statistically significant in any category, while GOVSIZE is statistically significant in the categories of "Slightly unhappy" and "Happy". Values for GOVSIZE were –0.24 and 0.81 in the categories of "Slightly unhappy" and "Happy", respectively. This reveals that a 1% increase in government size resulted in a reduction in the probability of being "Slightly unhappy" by 0.24percentage points and an increase in the probability of being "Happy" by 0.81 percentage points. This result indicates that government size has a greater effect on increasing the probability that people will be happy than on decreasing the probability that people will become unhappy.

With regard to the control variables exhibited in Table 2(a), GINI yields a positive

sign in all estimations and is statistically significant in columns (2), (4) and (5). This suggests that income inequality leads people to feel happy, which is not consistent with Western countries where income inequality reduces the degree of happiness (Alesina et al., 2004). The positive effect of income inequality on happiness might be in part because of the tunnel effects suggested by Hirschman (1973). According to Hirschman, everybody feels better off if people consider the progression of others as a sign that, in turn, they will progress in the future. If this holds true, income inequality is positively associated with happiness. The results for the other control variables in the present study are similar to those obtained in earlier studies. For instance, the positively significant results for MARRY and INCOME are consistent with those found in previous works (e.g., Alesina et al., 2004; Bjørnskov et al., 2008a; 2008b; Hessami, 2010). The negatively significant sign for MALE is also in agreement with the results of previous studies (e.g., Alesina et al., 2004; Bjørnskov et al., 2008a; 2008b; Hessami, 2010). The results of these previous studies imply that there is no variation among countries with regard to the impact of various socio-economic factors on happiness.

As shown in Table 3, DISCINF yields a significant positive sign for workers, while it yields a negative sign for non-workers. GOVSIZE yields a positive sign for all estimations and is statistically significant for non-workers but not workers. Overall, the results of Table 3 are essentially identical to those in Table 2. The results obtained in the present study are consistent with and supportive of the concepts expressed in Hypotheses 1 and 2.

5. Conclusion

Controversy exists regarding the influence of government activities on citizens' welfare. Government is entrusted to a group of elected representatives. Government behaves as a 'benevolent dictator' to maximize citizens' welfare as it is the role of politicians to realize the desires of the entire population. In contrast, politicians can seek to promote their own self-interest and therefore aim to be re-elected by promoting projects that are favored by special interest groups rather than by citizens as a whole. As a consequence, government activity may not maximize citizens' welfare. Thus, government has a positive impact on the happiness of those who gain benefit from government activities, but not on the happiness of the remaining citizens. Disclosure of official government information can decrease information asymmetry between government and citizens, deterring politicians from self-interest behavior. Accordingly, the disclosure of government information is expected to increase the happiness of those

who do not enjoy the benefits of government activities.

In examining the effect of the disclosure of information and government size, this paper matched individual level data with prefecture level data sourced from Japan in 2003. Using the Ordered Probit estimation, the following were found:

(1) The disclosure of official information is positively associated with the happiness of workers but not that of non-workers.

(2) Government size has a positive effect on the happiness of non-workers but not that of workers.

The above findings clarify that information asymmetry between government and citizens has a positive effect on the happiness of those who bear the expense of public services. In contrast, information asymmetry does not affect the happiness of the beneficiaries of public services, while government size increases their happiness. Thus, the importance of fairness and efficiency differs among 'citizens', which is in line with the public choice theory. The findings of this paper are not incongruent with the situation in Finland where high expenditure in public health care increases the citizens' life satisfaction when local government cannot choose which services to provide and for whom (Kotakapri & Laamanen, 2010). Such satisfaction comes from the fact that there is no suspicion of cheating, arbitrariness, favoritism, or discrimination in the Finnish selection process. Thus, it can be argued that a fair government generally leads to an increase in citizens' satisfaction levels regarding public service.

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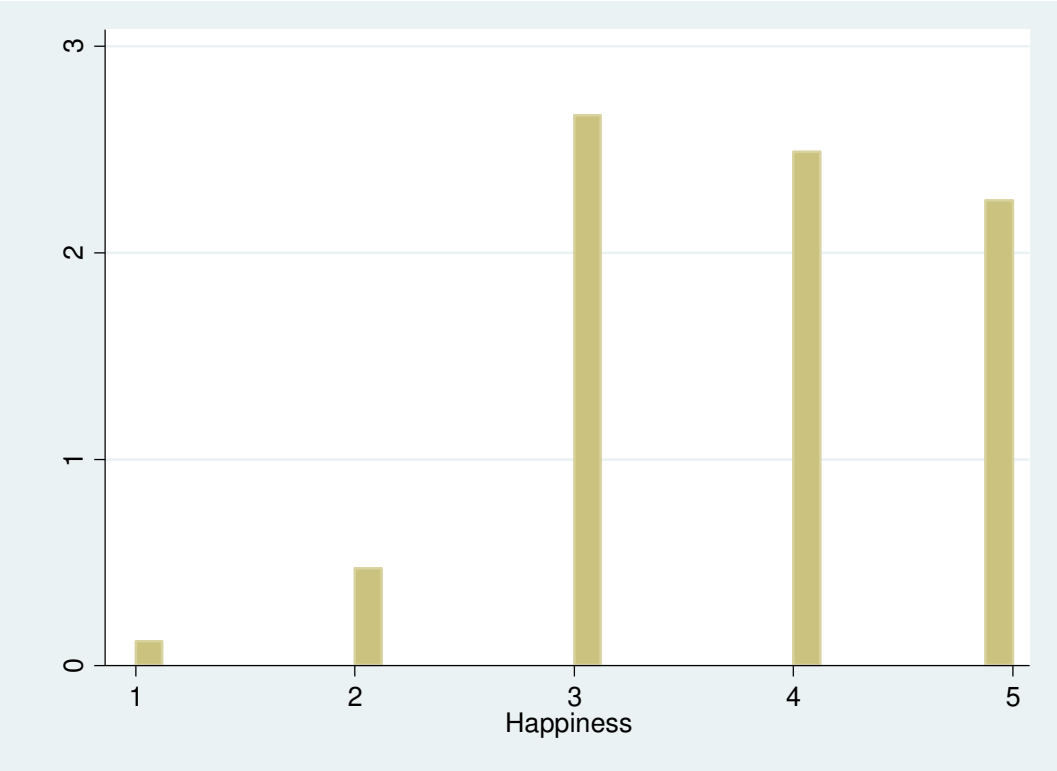

Fig.1 Distribution of happiness

Table 1. Variable definitions and basic statistics

Variables	Definition	(1) All	(2) Standard deviation	(3) Max	(4) Min	(5) Worker	(6) Non-worker
	Prefecture level data						
DISCINF	Number of municipalities enacting the disclosure of official government information ordinance (municipalities which enacted disclosure of official government information ordinance)/(All municipalities).	0.92	0.88	1	0.53	0.92	0.92
GOVSIZE	Government size (Government expenditure)/(GDP).	0.10	0.04	0.24	0.05	0.10	0.10
GINI	Gini coefficient of income in 1999.	0.29	0.13	0.35	0.27	0.29	0.29
	Individual level data						
HAPPY	The value ranges from 1 (unhappy) to 5 (happy).	3.78	0.96	5	1	3.79	3.77
MARRY	Marriage dummy, which is 1 if an individual is married, or otherwise 0.	0.29	0.43	1	0	0.74	0.72
MALE	Male dummy, which is 1 if an individual is male, or otherwise 0.	0.73	0.49	1	0	0.52	0.30
INCOM	Household income (10 million Yen)	5.73	4.02	2.3	0	6.87	4.17
EDU	Years of schooling	11.9	2.70	18	6	12.6	11.0
AGE	Ages	53.0	16.7	89	20	47.0	60.7
WORK	Job dummy, which is 1 if an individual is a worker, or otherwise 0.	0.54	0.49	1	0		

Note: Gini coefficients are available every 5 years and were not available in 2003. Therefore, I used Gini coefficients from 1999. With the exception of the Gini coefficients, all variables are at the 2003 value. Columns (1), (2), (3), and (4) report simple averages, standard deviations, maximum values, and minimum values, using all samples. Columns (5) and (6) exhibit simple averages using the workers

sample and non-workers sample, respectively. Data was collected from the Asahi Shimbun newspaper (2008) and the Statistics Bureau of the Ministry of Internal Affairs and Communications (various years).

Table 2(a). Ordered Probit Model

	All ages			Ages 25–65 years		
Variables	(1) All	(2) Worker	(3) Non-worker	(4) All	(5) Worker	(6) Non-worker
DISCINF	0.64	1.35***	–0.16	0.62	1.07**	0.007
	(1.35)	(3.10)	(–0.20)	(1.54)	(2.35)	(0.01)
GOVSIZE	1.81**	1.70*	2.05*	1.82**	1.67	2.41*
	(2.37)	(1.67)	(1.73)	(2.21)	(1.54)	(1.65)
GINI	4.15	7.71**	0.63	4.71*	7.37**	0.50
	(1.57)	(2.46)	(0.16)	(1.77)	(2.15)	(0.15)
MARRY	0.44***	0.53***	0.36***	0.58***	0.59***	0.42*
	(5.72)	(4.50)	(3.70)	(5.14)	(4.55)	(1.93)
MALE	–0.14**	–0.01	–0.33***	–0.11	0.004	–0.47***
	(–2.23)	(–0.25)	(–3.56)	(–1.51)	(0.05)	(–3.19)
INCOM	0.41***	0.39***	0.48***	0.39***	0.38***	0.36*
	(4.87)	(3.30)	(3.32)	(4.02)	(3.01)	(1.70)
EDU	0.02	0.02	0.02	0.04***	0.02	0.09**
	(1.64)	(1.30)	(0.95)	(2.70)	(1.31)	(2.39)
AGE	–0.002	–0.004	0.001	–0.007**	–0.006**	–0.005
	(–0.95)	(–1.63)	(0.36)	(–2.98)	(–2.05)	(–1.18)
WORK	–0.09			–0.01		
	(–147)			(–0.13)		
Observations	1291	755	536	956	689	267
Pseudo R^2	0.02	0.03	0.03	0.04	0.04	0.06

Note. Values in parentheses are z-statistics calculated using robust standard errors clustered at the prefecture. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 2(b). Marginal effects of Table 2(a)

Panel (I)	Workers and non-workers: Marginal effects of Column(4)				
Variables	(1) Value = 1 (Unhappy)	(2) Value = 2 (Slightly unhappy)	(3) Value = 3 (Depends)	(4) Value = 4 (Modestly happy)	(5) Value = 5 (Happy)
DISCINF	–0.01*	–0.05	–0.17	0.03	0.20
	(–1.71)	(–1.48)	(–1.52)	(1.42)	(1.54)
GOVSIZE	–0.04*	–0.15*	-0.50**	0.09*	0.60**
	(–1.94)	(–2.22)	(–2.22)	(1.89)	(2.22)
Panel (II)	Workers: Marginal effects of Column(5)				
Variables	(1) Value = 1 (Unhappy)	(2) Value = 2 (Slightly unhappy)	(3) Value = 3 (Depends)	(4) Value = 4 (Modestly happy)	(5) Value = 5 (Happy)
DISCINF	–0.02**	–0.08**	–0.31**	0.05**	0.35**
	(–2.27)	(–2.18)	(–2.29)	(2.08)	(2.35)
GOVSIZE	–0.03	–0.13	–0.48	0.09	0.55
	(–1.38)	(–1.52)	(–1.52)	(1.44)	(1.55)
Panel (III)	Non-workers: Marginal effects of Column(6)				
Variables	(1) Value = 1 (Unhappy)	(2) Value = 2 (Slightly unhappy)	(3) Value = 3 (Depends)	(4) Value = 4 (Modestly happy)	(5) Value = 5 (Happy)
DISCINF	–0.0002	–0.0007	–0.001	0.0003	0.002
	(–0.01)	(–0.01)	(–0.01)	(0.20)	(0.01)
GOVSIZE	–0.07	–0.24*	–0.60	0.10	0.81*
	(–1.49)	(–1.67)	(–1.60)	(1.32)	(1.66)

Note. Values in parentheses are z-statistics calculated by robust standard errors clustered at the prefecture. *, **, and *** denote significance at the 10%, 5% and 1% levels, respectively.

Table 3. Ordered Probit Model (excluding "depends" from Happiness)

	All ages			Ages 25–65 years		
Variables	(1) All	(2) Worker	(3) Non-worker	(4) All	(5) Worker	(6) Non-worker
DISCINF	0.58	1.66***	–0.65	0.44	1.10*	–1.11
	(1.15)	(2.97)	(–0.81)	(0.75)	(1.73)	(–0.86)
GOVSIZE	1.92**	1.57	2.44*	2.06**	1.00	4.12*
	(2.53)	(1.27)	(1.78)	(2.46)	(0.81)	(2.15)
GINI	4.54	10.6***	–0.77	5.60*	9.51**	–1.63
	(1.41)	(2.99)	(–0.17)	(1.69)	(2.24)	(–0.32)
MARRY	0.46***	0.47**	0.50***	0.65***	0.58***	0.66**
	(3.92)	(2.34)	(3.97)	(3.78)	(2.71)	(2.16)
MALE	–0.15**	0.06	–0.49***	–0.05	0.12	–0.61***
	(–2.14)	(0.64)	(–4.13)	(–0.67)	(1.07)	(–3.15)
INCOM	0.20*	0.15	0.38**	0.16	0.14	0.21
	(1.76)	(0.94)	(2.00)	(1.26)	(0.84)	(0.82)
EDU	0.01	0.01	0.01	0.04*	0.02	0.07
	(0.78)	(0.74)	(0.57)	(1.90)	(1.03)	(1.36)
AGE	–0.001	–0.006	0.005	-0.005*	-0.005	–0.001
	(–0.56)	(–1.56)	(1.41)	(–1.79)	(-1.15)	(–0.30)
WORK	–0.05			0.04		
	(–0.66)			(0.48)		
Observations	860	497	363	641	455	186
Pseudo R^2	0.02	0.02	0.04	0.03	0.03	0.08

Note. Values in parentheses are z-statistics calculated using robust standard errors clustered at the prefecture. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.