

“Effects of the Great East Japan Earthquake on Altruism and Subjective Well-Being”

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Abstract

Using large panel data which consist of responses from over 4000 households in all over Japan, we analyzed changes in people’s worldviews and subjective well-being (happiness) before and after the Great East Japan Earthquake. As a result we found that 1) there were more people - seven times as many - who replied that their happiness improved after the earthquake than those who said it worsened, and also that 2) many more Japanese people have become more altruistic since the earthquake, even in the most affected areas. One possible interpretation of these results is that donating improves people’s subjective well-being, and those who had or began to have an altruistic view and made donations after the earthquake began to feel happier than before.

JEL classification numbers: I18, I31, I38?

Keywords: subjective well-being, altruism, worldviews, the Great East Japan Earthquake, natural disasters.

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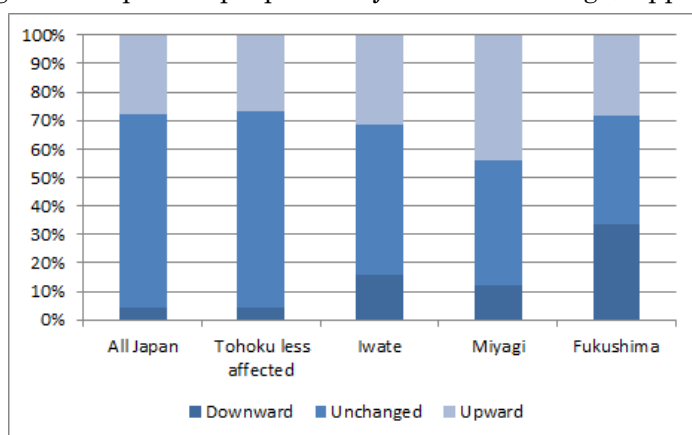
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1. Introduction

In this paper, we study the changes in Japanese people's worldviews and subjective well-being (happiness) before and after the Great East Japan Earthquake, using panel data compiled by a group of people mainly from Keio University. Among all the questions on the worldviews in the questionnaire, we drew most attention to one about people's altruistic view for the following reason: according to a Japanese Statistics Bureau report on expenditure by Japanese households, the most affected expenditure in March 2011 was donations, which had increased by over 850 percent, compared with March 2010 in both nominal and real terms, whereas the increase in expenditure on mineral water was only (though still large) 148.8 percent in nominal terms and 161.3 percent in real terms.

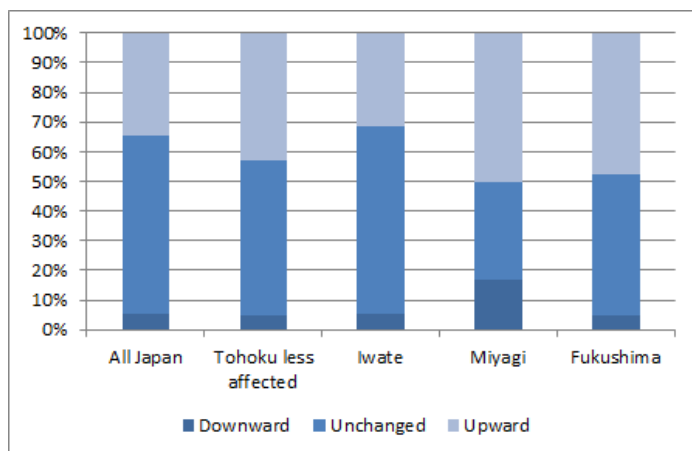
We found that there were more people – seven times as many – who replied that their happiness improved after the earthquake than those who said it worsened. The results suggest that more Japanese people began to realize they were enjoying a good life and were still well off even after the earthquake, even though they did not think in this way before the disaster.¹ However, we must also notice that there may well be some sample bias in the replies we obtained from the most affected areas – Iwate, Miyagi and Fukushima. We believe that many of those who were severely affected by the earthquake were not able to answer the surveys because of their situations. Therefore, we think the true level of well-being in the most affected areas should have been lower than shown in our paper, and needs careful consideration. Another striking result is that it seems many more Japanese people have become more altruistic - they began to give more priority to others - since the earthquake, even in the most affected areas.

Figure 1. Japanese people's subjective well-being (happiness) before and after 3.11



¹ Kimball et. al (2006) reports average US citizens felt unhappy after hurricane Katrina for a few weeks. .

Figure 2. Japanese people’s altruistic view before and after 3.11



2. Methodology and Results

Our analysis was conducted using Japanese household panel data compiled by a group of people mainly from Keio University. The panel data has been collected since 2004, but in 2011, they conducted two extra surveys in June and October, after the Great East Japan Earthquake. Our data on Japanese people’s altruism and subjective well-being mainly come from these two extra surveys, but we referred to the answers in the regular panel surveys also and tried to link all the relevant information to the replies in the extra surveys. Our data consists of over 4,000 respondents from all over Japan, including their residence information.

The questionnaires conducted in June 2011 and October 2011 asked respondents to answer to what extent they believed they were happy, at the time they were asked to answer, by choosing a number between 0 and 100. The June questionnaire also asked the respondents to what extent they thought they were happy in February 2011, and to answer retrospectively also by choosing a number between 0 and 100². As for the question on people’s altruistic view, they asked to what extent they gave priority to others, both in June and October, and respondents again replied by choosing a number between 0 and 100. The June questionnaire also asked how they thought they were on this point in February 2011.

We conducted a multi-nominal probit analysis of Japanese people’s subjective well-being and of their altruistic view by dividing our data into three categories:

² We calculated correlation coefficients between the retrospective replies on their happiness and the replies we collected earlier in 2011 before the earthquake (real time happiness) to check reliability of our retrospective data. It was 0.4 and we judge that our retrospective data contain sufficient information to do our analysis.

happiness improved, unchanged, or worsened, and altruism changed upward, unchanged, or changed downward compared with February 2011 for replies collected in June 2011 or October 2011. This method is taken to avoid inter-personal comparison on our subjective data.

From our multi-nominal probit analysis we found that the happiness of those who made donations relating to the earthquake improved in June 2011, and the effect of improvement remained statistically significant in the data collected in October 2011. Also, we found that altruism increased for those who had made donations by June 2011, and the effect of donating remained statistically significant in the replies we obtained in October 2011.³

3. Concluding Remarks

One possible interpretation of our results is that donating improves people's subjective well-being, and those who had or began to have an altruistic view and made donations after the earthquake began to feel happier than before. We think our analysis tell us that people's worldviews may affect their subjective well-being and our analysis on people's worldview and subjective well-being may give us a hint to better cope with natural or/and man-made disasters.⁴

References

Kimball, M., Levy, H., Ohtake, F., and Tsutsui, Y., (2006) "Unhappiness after Hurricane Katrina," NBER working paper No. 12062.

Perlman, S.E., Friedman, S., Galea, S., Nair, H.P., Eros-Sarnyai, M., Stellman, S.D., Hon, J., and C.M. Greene (2011) "Short-term and medium-term health effects of 9/11," *Lancet*. 378(9794):925-934.

Phifer, J.F., and F.H. Norris (1989) "Psychological Symptoms in Older Adults Following Natural Disaster: Nature, Timing, Duration, and Course," *Journal of Gerontology: Social Sciences*, vol. 44, no. 6, pp. 5207-5217.

Riis, J., G. Loewenstein, J. Baron, C. Jepson, A. Fagerlin, and P. A. Ubel. (2005) "Ignorance of Hedonic Adaptation to Hemodialysis: A Study Using Ecological Momentary Assessment." *Journal of Experimental Psychology: General* Vol.134, no. 1: pp. 3-9.

³ See also Riis et. al. (2005) for cognitive problems.

⁴ See also Perlman et. al. (2011) for health effects from man-made disasters, and Phifer and Norris (1989) for psychological effects from natural disasters.

Table 1 Estimation result of changes in subjective well-being (From February to June, 2011)

	Downward		Unchanged		Upward	
	Marginal effect	(S.E.)	Marginal effect	(S.E.)	Marginal effect	(S.E.)
Respondent was struck by the earthquake	0.0219	(0.0256)	-0.0359	(0.0997)	0.0140	(0.0997)
Any acquaintances (include R's family) were struck by the earthquake	0.0130	(0.0089)	-0.0145	(0.0209)	0.0016	(0.0209)
Living in the region affected by rolling brackouts	0.0116	(0.0122)	-0.0237	(0.0293)	0.0120	(0.0293)
Made donations regarding the earthquake	-0.0131	(0.0094)	-0.0471	(0.0233) *	0.0601	(0.0233) **
Provided relief supplies for victims	-0.0101	(0.0132)	-0.0161	(0.0310)	0.0263	(0.0310)
Subscribe earthquake insurance	0.0059	(0.0097)	0.0169	(0.0217)	-0.0228	(0.0217)
Subscribe life insurance	-0.0273	(0.0111) *	-0.0343	(0.0279)	0.0616	(0.0279) *
Household annual income (in million JPY)	0.0006	(0.0011)	-0.0011	(0.0034)	0.0004	(0.0034)
Household wealth (in 10million JPY)	-0.0006	(0.0016)	0.0017	(0.0032)	-0.0011	(0.0032)
Household debt (in 10million JPY)	0.0045	(0.0023) +	-0.0063	(0.0086)	0.0018	(0.0086)
Owner-occupier	0.0050	(0.0124)	-0.0185	(0.0294)	0.0134	(0.0294)
Age	-0.0009	(0.0004) **	0.0052	(0.0009) **	-0.0043	(0.0009) **
Sex (1 if male)	0.0144	(0.0085) +	0.0643	(0.0197) **	-0.0786	(0.0197) **
Marital status (1 if married)	-0.0067	(0.0124)	-0.0194	(0.0282)	0.0260	(0.0282)
Any child(ren) in the household	0.0094	(0.0124)	-0.0113	(0.0266)	0.0019	(0.0266)
Number of family members living together	-0.0041	(0.0044)	-0.0100	(0.0097)	0.0140	(0.0097)
Number of family members living apart	0.0087	(0.0082)	-0.0320	(0.0191) +	0.0233	(0.0191)
JHPS (1 if respondents of JHPS)	0.0093	(0.0086)	-0.0285	(0.0198)	0.0192	(0.0198)
Living in Hokkaido (Base dummy is living in Kyushu)	-0.0229	(0.0294)	0.0540	(0.0581)	-0.0311	(0.0581)
Living in Aomori, Akita or Yamagata pref.	-0.0310	(0.0389)	0.0976	(0.0724)	-0.0666	(0.0724)
Living in Iwate, Miyagi or Fukushima pref.	0.0563	(0.0288) +	-0.1215	(0.0990)	0.0653	(0.0990)
Living in Kanto	0.0266	(0.0188)	0.0150	(0.0397)	-0.0416	(0.0397)
Living in Chubu	0.0096	(0.0189)	0.0371	(0.0386)	-0.0468	(0.0386)
Living in Kinki	0.0137	(0.0190)	0.0863	(0.0386) *	-0.1000	(0.0386) **
Living in Chugoku	-0.0166	(0.0263)	0.1078	(0.0510) *	-0.0913	(0.0510) +
Living in Shikoku	-0.0035	(0.0315)	-0.0435	(0.0630)	0.0471	(0.0630)
City Size	YES					
Log likelihood	-1773.92					
N	2310					

Notes: **, * and + indicate that the estimated marginal effects are significant at 1%, 5% and 10% levels, respectively. Robust standard errors are in the parentheses.

Table 2 Estimation result of changes in altruistic view (From February to June, 2011)

	Downward		Unchanged		Upward	
	Marginal effect	(S.E.)	Marginal effect	(S.E.)	Marginal effect	(S.E.)
Respondent was struck by the earthquake	0.0285	(0.0395)	-0.0003	(0.1048)	-0.0281	(0.1017)
Any acquaintances (include R's family) were struck by the earthquake	-0.0020	(0.0094)	-0.0005	(0.0211)	0.0025	(0.0205)
Living in the region affected by rolling brackouts	0.0077	(0.0126)	0.0254	(0.0301)	-0.0331	(0.0294)
Made donations regarding the earthquake	-0.0001	(0.0102)	-0.0514	(0.0238) *	0.0515	(0.0233) *
Provided relief supplies for victims	-0.0012	(0.0139)	-0.0502	(0.0313)	0.0514	(0.0305) +
Subscribe earthquake insurance	-0.0122	(0.0093)	0.0104	(0.0219)	0.0019	(0.0215)
Subscribe life insurance	0.0102	(0.0123)	-0.0423	(0.0283)	0.0321	(0.0276)
Household annual income (in million JPY)	-0.0013	(0.0017)	0.0049	(0.0034)	-0.0036	(0.0033)
Household wealth (in 10million JPY)	-0.0008	(0.0014)	0.0014	(0.0030)	-0.0006	(0.0029)
Household debt (in 10million JPY)	0.0034	(0.0033)	0.0138	(0.0090)	-0.0171	(0.0091) +
Owner-occupier	-0.0079	(0.0124)	0.0031	(0.0296)	0.0049	(0.0291)
Age	0.0009	(0.0004) *	-0.0013	(0.0009)	0.0004	(0.0009)
Sex (1 if male)	-0.0200	(0.0091) *	-0.0016	(0.0201)	0.0216	(0.0196)
Marital status (1 if married)	0.0024	(0.0121)	-0.0584	(0.0283) *	0.0559	(0.0277) *
Any child(ren) in the household	-0.0190	(0.0116)	0.0877	(0.0268) **	-0.0687	(0.0263) **
Number of family members living together	0.0042	(0.0040)	-0.0182	(0.0099) +	0.0141	(0.0096)
Number of family members living apart	0.0163	(0.0078) *	-0.0281	(0.0193)	0.0118	(0.0189)
JHPS (1 if respondents of JHPS)	0.0124	(0.0088)	0.0020	(0.0200)	-0.0144	(0.0195)
Living in Hokkaido (Base dummy is living in Kyushu)	-0.0088	(0.0255)	0.0686	(0.0572)	-0.0599	(0.0559)
Living in Aomori, Akita or Yamagata pref.	-0.0287	(0.0343)	-0.0546	(0.0725)	0.0832	(0.0697)
Living in Iwate, Miyagi or Fukushima pref.	-0.0082	(0.0462)	-0.2378	(0.1043) *	0.2460	(0.1004) *
Living in Kanto	0.0100	(0.0171)	-0.0242	(0.0401)	0.0142	(0.0392)
Living in Chubu	-0.0089	(0.0167)	-0.0100	(0.0388)	0.0189	(0.0379)
Living in Kinki	-0.0118	(0.0171)	0.0467	(0.0385)	-0.0350	(0.0377)
Living in Chugoku	-0.0441	(0.0268) +	0.0552	(0.0512)	-0.0110	(0.0495)
Living in Shikoku	-0.0297	(0.0326)	-0.1091	(0.0656) +	0.1387	(0.0626) *
City Size			YES			
Log likelihood			-1939.39			
N			2399			

Notes: **, * and + indicate that the estimated marginal effects are significant at 1%, 5% and 10% levels, respectively. Robust standard errors are in the parentheses.