

Effects of the Great East Japan
Earthquake on Subjective Well-Being
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Introduction

- ◆ We analyze changes in Japanese people's subjective well-being (happiness) and altruistic world view before and after 3.11.
- ◆ However, since these two variables are subjective, their measurement errors are likely to be correlated.
- ◆ We avoid using these two variables in the same regression and introduce a new method, and show how changes in altruism affect changes in happiness.

Introduction

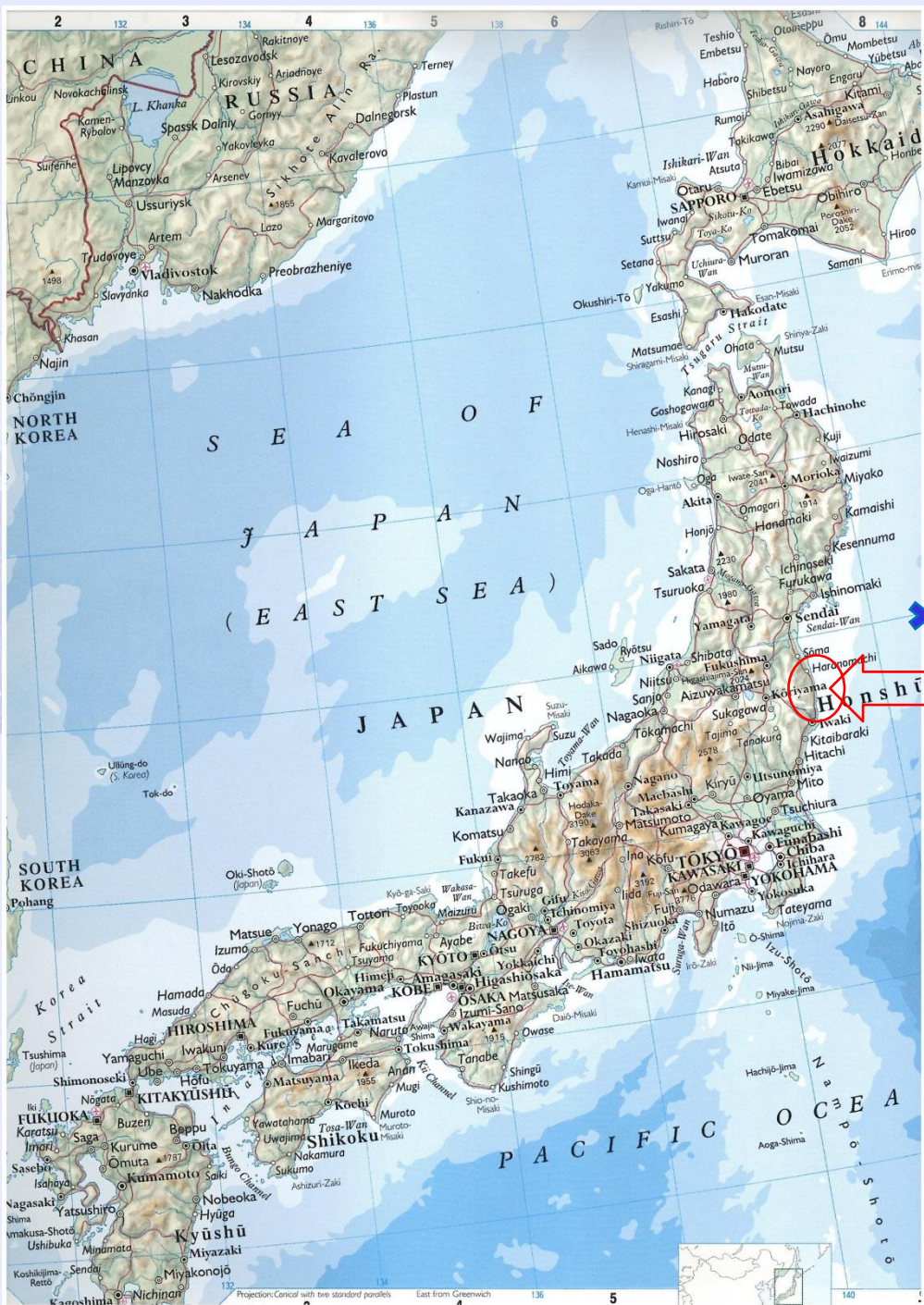
- ◆ We use two-step procedure
- ◆ In step 1, we identify the effect of altruism (subjective variable) on an objective variable, charitable giving.
- ◆ In step 2, we measure the effect of charitable giving on happiness (another subjective variable).
- ◆ In each step, we run a two-stage logit regression, which controls for reverse causality.
- ◆ We call this the “Subjective-Objective-Subjective” method. (SOS method)
- ◆ We found that an increase in altruism spurred people to give charity, which in turn increased their happiness.

Related Literatures

- ◆ Kimball, Levy, Ohtake and Tsutsui (2006) “Unhappiness after Hurricane Katrina” NBER working paper.
- ◆ Uchida, Takahashi and Kawahara (2013) J. of Happiness Studies.
- ◆ Ishino, Kamesaka, Murai and Ogaki (2012, 2013)
- ◆ Kitamura and Hirai (2012) etc.

Great East Japan Earthquake

- ◆ Occurred on March 11, 2011
- ◆ Earthquake (Northern part of Japan)
- ◆ Tsunami (Pacific coast)
- ◆ Fukushima nuclear power plants
- ◆ However, there was no riot or violence of any kind – foreign medias praised how Japanese people behaved
- ◆ Resilience of Japanese people?



Hokkaido

Tohoku
 Most affected– Pacific coast
 Iwate
 Miyagi
 Fukushima

✕ Hypocenter (M 9.0)

✕ Fukushima nuclear plants

Kanto (includes Tokyo)
 Chubu (includes Nagoya)
 Kinki (includes Kyoto)
 Chugoku (includes Hiroshima)
 Shikoku
 Kyusyu/Okinawa

Philip's Standard Reference Atlas

Our Japanese panel data

- ◆ Compiled by a group of people mainly from Keio University
- ◆ Over 4,000 replies from all over Japan
- ◆ Asked “to what extent they thought they were happy” (11 point 0-100 scale)
- ◆ Also asked “to what extent they gave priority to others” (11 point 0-100 scale)
- ◆ What it means by being well?
- ◆ Worldview? Culture? Social norms? Something related to eudaimonia?

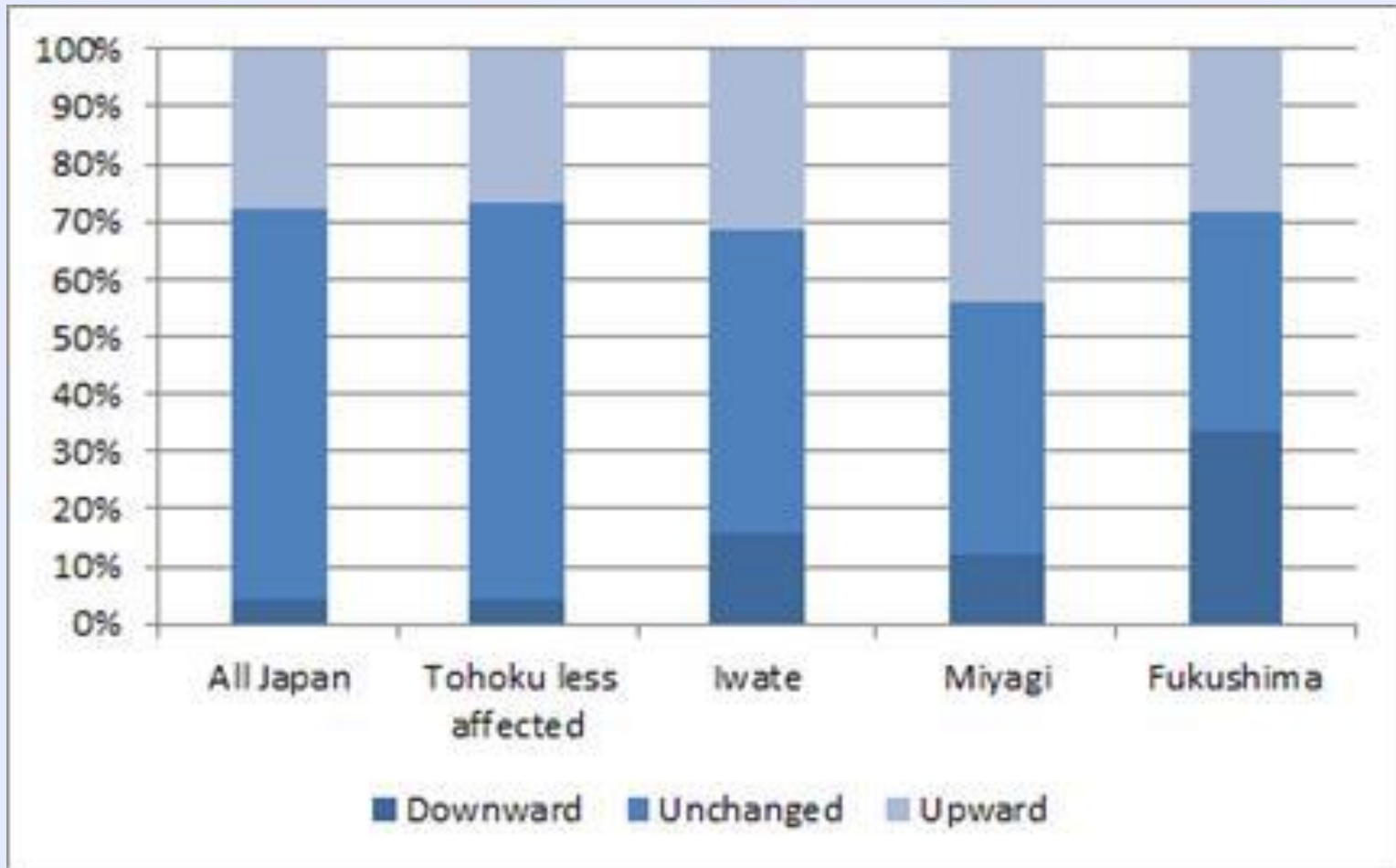
“Flourishing” or “Eudaimonic” Well-Being

- ◆ *Psychological Well-Being Scale* by Ed Diener and Robert Biswas-Diener, January 2009. Published in: E. Diener (2009) *Assessing Well-Being: The Collected Works of Ed Diener*. Springer.

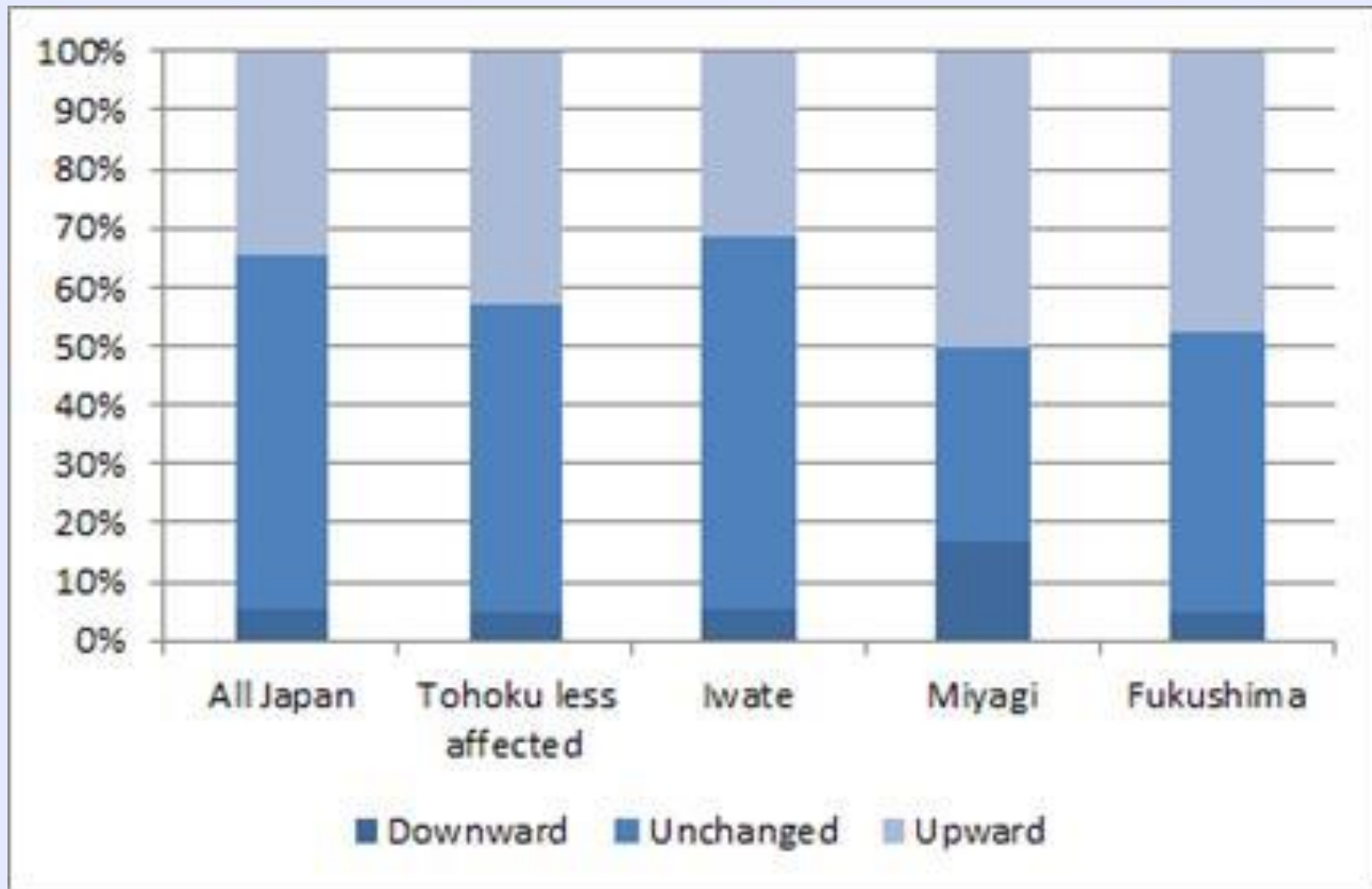
Below are 8 statements with which you may agree or disagree. Using the 1-7 response scale below, indicate your agreement with each item by indicating that response for each statement

- ◆ *I lead a purposeful and meaningful life*
- ◆ *My social relationships are supportive and rewarding*
- ◆ *I am engaged and interested in my daily activities*
- ◆ *I actively contribute to the happiness and well-being of others (Altruism)*
- ◆ *I am competent and capable in the activities that are important to me*
- ◆ *I am a good person and live a good life*
- ◆ *I am optimistic about my future*
- ◆ *People respect me*

Japanese people's subjective well-being (happiness)



Japanese people's altruistic view before and after 3.11



Our Analysis

- ◆ Happiness: improved, unchanged, or worsened
- ◆ Altruistic view: changed upward, unchanged, or changed downward
- ◆ We compute the standard errors by bootstrap with 3000 replications.

1st Set of Our Estimations

- ◆ Changes in altruism \Rightarrow Probability of making a charitable donation
- ◆ We use a two-stage multinominal logit analysis to consider the possibility of reverse causality. (Making donations may increase feelings of altruism.)
- ◆ 1st stage: dependent variable \Rightarrow dummy variable representing the sign of the change in altruism.
- ◆ 2nd stage: dependent variable \Rightarrow dummy variable for charitable giving, explained by fitted values of the altruism-change dummy predicted in the first stage.

2nd Set of Our Estimations

- ◆ Charitable donation \Rightarrow Changes in Happiness
- ◆ We use a two-stage analysis to consider the possibility of reverse causality. (People who became happier may donate more.)
- ◆ 1st stage: binominal logit regression of the dummy variable for charitable giving.
- ◆ 2nd stage: dependent variable \Rightarrow dummy representing the sign of the happiness change before and after 3.11.

1st set of estimations: Altruism \Rightarrow Donation

Table 4: Estimation result of Making donations (Structural Form)			
	Structural Form		
	Marginal Effect	(S.E.)	
Altruism changed downward (Predicted value. Base dummy is Upward)	-1.3214	(0.7663)	**
Altruism were unchanged (Predicted value. Base dummy is Upward)	-1.4241	(0.7927)	**
Log likelihood	-1446.12		
N	2725		
Notes: ***, ** and * indicate that the estimated marginal effects are significant at 1%, 5% and 10% levels, respectively. For the dummy variables for changing altruism, the significance level is based on the one sided test.			

2nd set of estimations: Donation \Rightarrow Happiness (retrospective data)

Table 5 Estimation result of changes in well-being (From February to June)						
	Upward			Downward		
	Marginal Effect	(S.E.)		Marginal Effect	(S.E.)	
Donation (Predicted value)	0.5793	(0.2641)	**	-0.1714	(0.1341)	
Log likelihood				-1999.96		
N				2622		
Notes: ***, ** and * indicate that the estimated marginal effects are significant at 1%, 5% and 10% levels, respectively. For the donation variable, the signigfiance level is based on the one seided test because of Dunn et al (2008).						

2nd set of estimations: Donation \Rightarrow Happiness (real time data)

Table 6 Estimation result of changes in well-being (From January to June)						
	Upward			Downward		
	Marginal Effect	(S.E.)		Marginal Effect	(S.E.)	
Donation (Predicted value)	0.4381	(0.2342)	**	-0.2233	(0.2073)	
Log likelihood	-3021.10					
N	2956					
Notes: ***, ** and * indicate that the estimated marginal effects are significant at 1%, 5% and 10% levels, respectively. For the donation variable, the significance level is based on the one sided test because of Dunn et al (2008).						

Conclusions

- ◆ Those who began to have more altruistic view made donations regarding the earthquake
- ◆ Happiness of those who made donations relating to the earthquake improved
- ◆ We confirmed the causality: altruistic view \Rightarrow donations \Rightarrow improvement in happiness
- ◆ We proposed a new method: Subjective \Rightarrow Objective \Rightarrow Subjective (SOS method!)