

DOES NATURAL DISASTER AFFECT ALCOHOL CONSUMPTION IN THE LONG RUN?

–NATURAL EXPERIMENT FROM THE GREAT EAST JAPAN EARTHQUAKE–

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1. Introduction

Large-scale disasters are known to increase prompt alcohol consumption of disaster victims, but its potentially prolonged phenomenon have been rarely tracked. Medical studies limit their analysis on one-shot survey and/or fail to set up the randomized control trial situation, mainly due to difficulties in retrospective data collection. Recent economic studies merit attention which use longitudinal survey data to identify the causal impacts on human wellbeing and risk-taking behaviors from the Great East Japan Earthquake and the Fukushima-Daiichi nuclear power plant accident in 2011 (e.g., Rehdanz et al., 2015; Sugano, 2016; Hanaoka et al., 2018). While they take an advantage of using the difference-in-differences approach to quantify such impacts, data availability confines them to short-term analysis with two periods just before and after the disaster. This study aims to complement them by examining the continued impact of the Great East Japan Earthquake and the subsequent Fukushima accident on alcohol consumption. Long-term monthly panel data of alcohol expenditure in 47 prefectural capital cities allow us to quantify the dynamics of alcohol consumption in the long run.

2. Data and Methods

We use the monthly household alcohol expenditure data from the Family Income and Expenditure Survey at capital cities in 47 prefectures from January 2008 to December 2014. Our identification strategy relies on exogenous variations in the seismic intensity (SI) across sample cities at the time of the Great East Japan Earthquake as well as in the change of ambient radiation levels caused by Fukushima-Daiichi nuclear power plant accident in 2011. Such natural experiment enables us to conduct the difference-in-differences method to quantify the causal disaster impacts on alcohol consumption. The long-term continuous data also allows us to validate the parallel trend assumption between treatment and control groups. In addition, we control for possibly all socioeconomic and

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climactic factors that affect alcohol consumption. We also employ city-by-month and year-by-month fixed effects to control for other potentially confounding factors. Our estimate can then capture the disaster impacts arising from unobserved determinants of household members such as psychological and physical stresses and risk preference. The analysis is further extended to compare the disaster impacts among different types of households. Comprehensive clarification of the heterogeneous impacts of different types of disasters among different types of households can assist in policy formulation in disaster recovery.

3. Results and Concluding Remarks

We find that the proportion of alcohol beverages spent by average households in severely damaged cities (SI of 6) significantly increased by more than 10 percentage point as compared to households in literally no damaged areas (SI of 3 or less) after 4 years of the disaster. We also find that the effect developed over time. This trend was particularly pronounced for non-employed households (heads of households are mostly retired). Our results indicate that alcohol consumption increased in the long run due to stress caused by anxiety or disappointment about the slow recovery of local economy. Such stress particularly overwhelmed unemployed (retired) households. Public or private assistance programs need to consider appropriate timing, space, and socioeconomic status in designing effective supports.

References

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