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Income inequality, perceived happiness, and self-rated health: Evidence from nationwide surveys in Japan☆,☆☆

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ABSTRACT

In this study, we examined how regional inequality is associated with perceived happiness and self-rated health at an individual level by using micro-data from nationwide surveys in Japan. We estimated the bivariate ordered probit models to explore the associations between regional inequality and two subjective outcomes, and evaluated effect modification to their sensitivities to regional inequality using the categories of key individual attributes. We found that individuals who live in areas of high inequality tend to report themselves as both unhappy and unhealthy, even after controlling for various individual and regional characteristics and taking into account the correlation between the two subjective outcomes. Gender, age, educational attainment, income, occupational status, and political views modify the associations of regional inequality with the subjective assessments of happiness and health. Notably, those with an unstable occupational status are most affected by inequality when assessing both perceived happiness and health.

Introduction

Perceived happiness and good health are the key elements of individual well-being, but they tend to be discussed separately. Many studies on social epidemiology have investigated the association between health and socioeconomic factors. It is now widely recognized that inequalities in health status associated with socioeconomic status are substantial (Kawachi & Kennedy, 1997; Subramainan, Kawachi, & Kennedy, 2001). In particular, evidence suggesting that income and educational attainment significantly affect health has important implications on economic and educational policies (Lleras-Muney, 2005; Smith, 1999). In recent years, the association between income distribution in society and individual health has been increasingly focused upon. As surveyed by Subramanian and Kawachi (2004), many attempts of multilevel analyses indicated a significant correlation between regional income inequality and health.

Meanwhile, many economists have been examining the factors that determine perceived happiness, given that individual well-being and social welfare are central issues to be addressed in economics. Since the late 1990s, economists have started to contribute large-scale empirical analyses of the determinants of perceived happiness in different countries and periods, as surveyed by Frey and Stutter (2002). For example, Blanchflower and Oswald (2004) and Easterlin (2001) showed that income increases the level of perceived happiness. More recently, Alesina, Di Tell, and MacCulloch (2004) observed that higher inequality in society tends to reduce individual happiness as in the case of self-rated health, by using micro-data of the United States and European countries.

In general, happiness is a more complicated and multi-dimensional concept than health, because the former covers physical, mental, socioeconomic, and many other aspects of individual well-being. It is, however, incorrect to view the relation between the two subjective outcomes in a unidirectional manner; although health is considered to be a key component of happiness, it is likely to affect health or its subjective assessment. Indeed, some empirical studies have reported that healthier individuals tend to

☆ The data from Comprehensive Survey of Living Conditions of People on Health and Welfare were made available by the Ministry of Health, Labor and Welfare of Japan under the project entitled "Research on Social Security Benefit and Contributions with reference to Income, Asset and Consumption" in 2008 (No. 1211006). The micro-data from this survey were accessed and analyzed exclusively by Takashi Oshio.

☆☆ The data for this secondary analysis, the Japanese General Social Surveys (JGSS), was provided by the Social Science Japan Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, the University of Tokyo. The JGSS are designed and carried out by the JGSS Research Center at Osaka University of Commerce (Joint Usage/Research Center for Japanese General Social Surveys accredited by Minister of Education, Culture, Sports, Science and Technology), in collaboration with the Institute of Social Science at the University of Tokyo.

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feel happier (Perneger, Hudelson, & Bovier, 2004), while a better assessment of happiness can lead to a higher level of self-rated health (Pettit & Kline, 2001). Further, it is possible that perceived happiness and self-assessed health reflect the different facets of a common underlying construct such as the general physical and mental well-being, as emphasized by Subramanian, Kim, and Kawachi (2005). The common socioeconomic factors—including income, age, gender, educational attainment, and relations with family members and neighbors—may affect both outcomes, albeit not in a uniform manner.

Following these previous studies on social epidemiology and happiness, we attempt to examine how regional inequality is associated with both perceived happiness and self-rated health at an individual level by using the micro-data obtained from nationwide surveys in Japan. Our analysis has three distinctive features as compared to the existing studies. First, we explicitly took into account a possible correlation between perceived happiness and self-rated health. To this end, we estimated the ordered probit models of happiness and health simultaneously, rather than separately estimating them. This attempt was inspired by a multilevel analysis conducted by Subramanian et al. (2005), who investigated (i) the individual determinants of perceived happiness and self-rated health and (ii) the correlations between the two outcomes at the community and individual levels. However, they did not explore the impact of regional inequality on the two subjective outcomes.

Second, our analysis extended the existing empirical analyses of social epidemiology, which have concentrated largely on the impact of regional inequality on health, by investigating the impact on perceived happiness as well. Alesina et al. (2004) was an early example that analyzed the impact of regional inequality on perceived happiness, but it did not examine the impact on self-rated health. We examined how regional inequality affects both outcomes based on a common dataset and the simultaneous equation system.

Finally, we evaluated effect modification to sensitivities to regional inequality of perceived happiness and self-rated health using the categories of key individual attributes. It is widely recognized that these attributes influence the individual assessment of well-being, but the manner in which they modify the associations of regional inequality remains virtually unexplored. The observed correlations between regional inequality and subjective outcomes for the society as a whole may be misleading, if the associations differ substantially across individuals with different characteristics. Alesina et al. (2004) pointed out that the poor and left-wingers are sensitive to inequality in Europe, while in the United States, the perceived happiness of these groups is uncorrelated with inequality. It is also relevant to compare the sensitivities of self-rated health.

Our analysis was based on the data collected from nationwide surveys in Japan. There have been a growing number of empirical analyses on happiness and self-rated health in Japan in recent years, against the background of rising concerns for the risk of widening income inequality and rising poverty (Tachibanaki, 2005). Indeed, multilevel analyses of the association between regional inequality and self-rated health at a nationwide level has been initiated by Shibuya, Hashimoto, and Yano (2002) and recently followed by Oshio and Kobayashi (2009). Ichida et al. (2009) is another recent example that discussed this issue using a multilevel model in Japan.

With respect to happiness, Ohtake (2004) and Sano and Ohtake (2007) in their original survey observed that unemployment reduces happiness. Based on the same survey, Ohtake and Tomioka (2004) provides tentative evidence that the Gini coefficient and the perception of rising inequality have a weak but positive correlation with happiness, a result that appears to be counter-intuitive. Our analysis in this paper is expected to add something new to the findings from these preceding studies and make the case in Japan comparable with those in other advanced countries.

Methods

Source of data

We utilized the micro-data obtained from the following two nationwide surveys in Japan, following Oshio and Kobayashi (2009): (i) the Comprehensive Survey of Living Conditions of People on Health and Welfare (CSLCPHW), which was compiled by the Ministry of Health, Labour, and Welfare, and (ii) the Japanese General Social Survey (JGSS), which was compiled and conducted by the Institute of Regional Studies at the Osaka University of Commerce in collaboration with the Institute of Social Science at the University of Tokyo.

We used the CSLCPHW to construct prefecture-level variables and the JGSS to construct individual-level variables, following Oshio and Kobayashi (2009). The CSLCPHW had sufficiently large samples to obtain the reliable estimates of the Gini coefficient and the mean household income in each prefecture, but it had limited information about demographic and socioeconomic factors at the individual level. In contrast, the JGSS had rich individual level information, but its sample size was not large enough to calculate prefecture-level variables. By matching these data from the two datasets depending on where each respondent resided, we conducted a multilevel analysis based on the three-year pooled data.

More specifically, we collected micro-data from 2001, 2004, and 2007 CSLCPHWs, which include household income data of 2000, 2003, and 2006, respectively. We ascertained the pre-tax income of each household. Further, to obtain detailed information about the socioeconomic background of each respondent, we collected data from 2000, 2003, and 2006 JGSSs. Next, we matched these data for each year depending on where each respondent resided.

The CSLCPHW randomly selected 2000 districts from the Population Census divisions, which were stratified in each of the 47 prefectures according to the population size. Next, all the households in each district were interviewed. The original sample size was 30,386, 25,091, and 24,578 households (with a response rate of 79.5, 70.1, and 67.7 percent) in 2000, 2003, and 2006, respectively. In this survey, we collected information about household income in order to calculate the income inequality measures and the mean income for each of the 47 prefectures. While both pre-tax and post-tax household incomes were available from the CSLCPHW, we focused on pre-tax household, following Oshio and Kobayashi (2009) and Shibuya et al. (2002). Like most previous studies, we equivalized household income by dividing it by the root of the number of household members.

The JGSS divided Japan into six blocks and subdivided them according to the population size into three (in 2000 and 2003) or four (in 2006) groups. Next, the JGSS selected 300 (in 2000) or 489 (in 2003 and 2006) locations from each stratum using the Population Census divisions and randomly selected 12–15 individuals aged between 20 and 89 from each survey location. Data were collected through a combination of interviews and self-administered questionnaires. The number of respondents was 2893, 1957, and 2124 (with a response rate of 63.9, 55.0, and 59.8 percent) in 2000, 2003, and 2006 surveys, respectively. From these surveys, we obtained perceived happiness, self-rated health, educational background, and subjective assessments about individuals' relationships with the community and other people.

In this empirical analysis, we eliminated the respondents aged below 25 and above 80 whose sample sizes were limited, students,