RESEARCH PAPER

Crime Victimization and Subjective Well-Being: Evidence from Happiness Data

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Abstract   Crime hurts victims financially and often physically. This paper examines how individual well-being is affected by the direct experience of burglary and robbery, using micro-level happiness data from Japan. I find that the direct experience of burglary significantly reduces victims' reported happiness. In monetary terms, being burglarized is as bad as losing approximately $35,000–$52,500. This paper also tests for heterogeneous effects of victimization on happiness. Happiness of the wealthy, who can afford to lose some money as well as buy some safety, is not affected by the direct experience of burglary or robbery. Crime victimization hurts homeowners more than renters most likely because their barriers to mobility make it difficult for homeowners to move in response to crime victimization. Finally, this paper suggests that victims' psychological non-pecuniary costs are substantially larger than the pecuniary losses.

Keywords   Crime · Victimization · Happiness · Well-being · Japan

1 Introduction

While the cost of crime to victims should be of a great concern for policymakers, estimates of the average cost of crime are difficult to make. The costs of crime include the pecuniary losses such as the money stolen, medical expenses, and working time lost due to injury, and the non-pecuniary loss from being victimized includes psychological problems (Freeman 1999). The current study examines the cost of crime victimization by looking at the reported subjective well-being of crime victims. Therefore, the present paper is at the crossroad of two lines of research: the literature on the cost of crime victimization and the literature on the determinants of subjective well-being. Since Becker (1968), crime has been studied extensively by economists. Economists' interest in happiness also has burgeoned in recent years, but the link between subjective well-being and actual cases of criminal victimization is relatively unexplored among economists. A few recent studies

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have examined the effect of recent experiences of crime on subjective well-being. Pow-dthavee (2005) finds that victims who experienced a burglary, robbery, housebreaking, or murder in their household in the prior 12 months report significantly lower perceived quality of life in South Africa. Davies and Hinks (2010) find that having been attacked in the previous 12 months decreases life satisfaction for households in Malawi. Cohen (2008), using the US General Social Survey, finds that being burglarized reduces happiness.

In this paper, I examine how individual well-being is affected by the direct experience of burglary and robbery, using micro-level data obtained from nationwide surveys in Japan. While the similar study by Cohen (2008) examines the effect of being burglarized and robbed on happiness, his study is based on a relatively small sample size (N = 2,260) when the sample is restricted to only cases where all variables are available. The dataset used in this study has a larger sample size (N = 16,637), and therefore I am able to exploit the large sample size to test for heterogeneity among crime victims. This is the major contribution of this study. Specifically, I look at different income groups and homeownership. The motivation for testing effects of crime victimization on different income groups is that the psychological damage from the loss of income is likely to be different between the rich and the poor, as the wealthy can afford to lose money as well as more safety in response to an actual criminal event. The motivation for testing het-erogeneity between homeowners and renters is that, while crime is likely to affect a moving decision (Dugan 1999; Cullen and Levitt 1999), homeowners face the barrier to mobility and are less likely to be able to move in response to victimization than renters. Additionally, or alternatively, psychological damage may be larger when the crime takes place on one's own property than on renting places. Thus, crime may hurt homeowners more than renters.

This study finds that burglary victims' pain, in terms of loss of happiness, is a 0.14 point reduction on a five-point scale. Being burglarized is as bad as losing approximately $35,000–$52,500. The negative well-being effect of being burglarized seems to be smaller than the effect of being unemployed. Additional tests confirm heterogeneous effects of victimization. Consistent with the hypotheses, victims with higher household income are not hurt by the experience of crime, and burglary and robbery victims who are homeowners suffer more while the well-being of victims who are renters is not affected.

2 Data and Empirical Strategy

The data used in this study are taken from *the Japanese General Social Surveys* (JGSS).[1] This survey is a repeated cross-section that was administered in 2000, 2001, 2002, 2003, 2005, 2006, and 2008, and contains a wide range of demographic, work, and attitudinal questions. In order to examine the link between well-being and victimization, I use, as a proxy indicator of well-being, individuals responses to the question "how happy are you?"[2]

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[1] *The Japanese General Social Surveys* 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.

[2] While psychologists tend to make a distinction between happiness and life satisfaction, economists tend to use the terms interchangeably (Graham et al. 2004). Not surprisingly, answers to happiness and life satis-faction questions are closely correlated (Graham 2009), but Deaton (2008) argues that they are not nec-essarily synonyms..

Table 1 Happiness in Japan

Happiness	Number of individuals	%
5 (highest)	4,958	29.8
4	5,455	32.8
3	5,136	30.9
2	878	5.3
1 (lowest)	210	1.3
	16,637	100.0

These data refers to the JGSS, a cross-section of 16,637 people, 2000–2003, 2005, 2006, and 2008

which is given on an ordinal scale from 1 (very unhappy) to 5 (very happy).[3] Some readers may worry about using such a question like "how happy are you?" for any useful statistical investigation, but psychologists have found that happiness data are correlated with physical manifestations of true internal happiness (e.g. smiling and blood pressure) as well as with suicide rates (see Alesina et al. 2004 for a review). A growing recent literature in economics successfully uses subjective survey data.[4] These studies include the examination of the relationship between subjective well-being and unemployment (Clark and Oswald 1994; Winkelmann and Winkelmann 1998), absolute and relative income (Clark and Oswald 1996; Easterlin 2001; Deaton 2008), inflation (Di Tella et al. 2001), inequality (Alesina et al. 2004; Oshio and Kobayashi 2011), political institution (Frey and Stutzer 2000), and social capital (Helliwell 2006; Kuroki 2011). Table 1 shows the distribution of reported happiness levels for the sample of 16,637 individuals. Consistent with the previous happiness literature, most people are fairly happy. Almost 30 % of the sample reported the highest level of happiness. More than 90 % of the sample reported the happiness level of 3 or above. The lowest level of happiness is reported by only 1.3 % of the sample.

It is important, however, to keep in mind that self-reported happiness (or life satisfaction), currently used by most economists engaged in happiness research, is far from an ideal measure of utility. Self-reported happiness is individuals' judgment about the quality of their lives overall, not how they felt at a particular moment in time, or not the immediate reactions to particular experiences such as crime victimization. Because happiness surveys simply ask individuals how happy or how satisfied they are with their lives, it is quite possible that the effect of crime victimization on respondents' self-reported happiness is different if another approach is used. For example, Experience Sampling Method (ESM), which collects information on individuals' experiences in real time instead of retrospection, and happiness (or life satisfaction) survey differ occasionally in the responses to particular events, such as divorce (see Bok 2000, for a review). I should emphasize, therefore, self-reported happiness is more subject to the weakness and distortions of memory or judgment than experience sampling, which might provide different results.

In the JGSS, victim-of-crime status is made up from the responses to the following questions: (1) During previous 12 months, did anyone break into or somehow illegally get into your home? and (2) During previous 12 months, did anyone take something directly from you by using force—such as a stickup, mugging, or threat? I call these two variables "burglary" and "robbery," respectively, and each of them takes value one for victims. Table 2 shows the fractions of respondents who reported robbery and burglary as well as levels of happiness for victims and non-victims in the sample. Respondents who were

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[3] The variables were originally ordered from 1 signifying "very happy" to 5 signifying "very unhappy" but have been reordered so that a higher value corresponds to a higher level of happiness.

[4] See Frey and Stutzer (2001) for overviews of the economics of happiness.

Table 2 Victim of crime and happiness

	Number of individuals	%	Mean happiness	Difference in means
Burglary				
Yes	483	2.9	3.66	
No	16,154	97.1	3.85	−0.19
Robbery				
Yes	141	0.8	3.61	
No	16,496	99.2	3.85	−0.24

These data refers to the JGSS, a cross-section of 16,637 people, 2000–2003, 2005, 2006, and 2008

burglarized report significantly lower happiness, and the difference (−0.19) between their happiness and that of non-victims is statistically significant ($p < 0.01$). Respondents who were robbed also report significantly lower happiness than those who were not robbed (−0.24), and the difference is statistically significant ($p < 0.01$). These differences are similar to Powdthavee (2005): the average life satisfaction was 0.27 point lower on a five-point scale for South African households who reported a burglary, robbery, house-breaking, or murder in the last 12 months (3.67 vs. 3.40). Similarly, Cohen (2008) finds that burglary victims' happiness is 0.22 point lower and robbery victims' happiness is 0.13 lower in the United States (although they were measured on a three-point scale: "very happy," "happy," and "not too happy").

I estimate standard happiness equations with a full set of controls. The dependent variable is an ordered variable that takes value from 1 to 5, where 5 is the highest possible level of subjective happiness, which is assumed to be a proxy for individual utility. Since happiness is measured on an ordinal scale and is discontinuous, I run an ordered probit regression. However, since coefficients in an ordered probit regression are not readily interpretable, I also run an OLS regression for a comparison of the coefficients. My estimating equation is:

$$Happiness_{ipt} = \alpha Victim_{ipt} + \beta X_{ipt} + \gamma Z_{pt} + \theta_p + \delta_t + \varepsilon_{ipt}$$

where $Happiness_{ipt}$ is reported happiness of individual i, living in prefecture p, in year t.[5] $Victim_{ipt}$ refers to the individual's victim-of-crime status for burglary and robbery. X_{ipt} is a vector of individual characteristics (age, gender, marital status, education, work status, homeownership, type of municipality of residence, and household income). I also include θ_p, a dummy variable for each prefecture; δ_t, a dummy for each year; and ε_{ipt}, an error term (i.i.d). The vector Z_{pt} refers to a set of variables aggregated at the prefecture level. These local area characteristics measured at the prefecture level include income per household, unemployment rate, crime rate, the fraction of young (<15) and old (>65) people, and population density. All prefecture level variables are obtained from *Portal Site of Official Statistics of Japan*.[6]

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[5] There are 47 prefectures in Japan.

[6] Though previous studies (Powdthavee 2005; Cohen 2008) discuss the role of local crime rates and analyze their contextual effects, the current study only focuses on actual individual victimization. The main reason is that I cannot match the individual with the municipal-level local crime rates because the JGSS does not contain information about which municipality within the prefecture the individual lives in. The prefecture-level crime rate is available, but a prefecture is a relatively wide geographic area. Within the same prefecture, it is likely that some areas have higher crime rates than others. Therefore, prefecture crime rates are not likely to be a good measure for local crime rates, and perhaps because of this reason, the local crime rate variable is never statistically significant in any of the results below. Cohen (2008) also finds that county-level crime rates have little effect on happiness in the United States.

The current study differs from Cohen (2008) and Davies and Hinks (2010) in that it does not use respondents' fear of crime to explain their happiness. Cohen (2008) uses the subjective assessment of how the individual feels in his or her neighborhood to as a proxy for the neighborhood safety. Davies and Hinks (2010) also use the similar subjective measure to explain subjective well-being. The JGSS also contains the same question about subjective assessment of safety, but this paper does not use this variable because the variable will be highly endogenous with the subjective outcome, self-reported happiness. It would not be surprising if individuals who pessimistically report that their area of residence is unsafe tend to be unhappy, and relating a person's subjective assessment of one aspect of life to his/her assessment of another should be avoided in general. For a critical discussion of subjective outcomes, see Hamermesh (2004).

3 Empirical Results

3.1 Basic Results

Table 3 shows the results from ordered probit and OLS regressions. Standard errors are clustered at the prefecture level, which will account for random disturbances which are potentially correlated within the same prefecture. Overall, the OLS results are quite similar to the results from ordered probit. The coefficient on the burglary variable is negative and statistically significant at the 1 % level both in the ordered probit and OLS regressions. Using the OLS estimate, being burglarized reduces happiness by 0.14 on a five-point scale. The coefficient on robbery is negative but imprecisely estimated in both ordered probit and OLS regressions. This insignificant effect of being robbed is consistent with Cohen (2008), who infers that people who reported robbery might have included many incidences of non-violent petty theft, such as purse snatching and pick-pocketing, which should have little effect on happiness.

Turning to other individual's characteristics, the statistical significance of all coefficients remains the same both in the ordered probit and OLS regressions. Women are more content than men, and the age coefficients indicate that well-being is U-shaped in years, as often found in the happiness literature (Clark and Oswald, 1996; Blanchflower and Oswald 2004), suggesting that happiness is lowest for people aged around 51 on average.[7] Married people are happier than divorced people, and divorced people are happier than people who have never been married. The level of happiness increases with education. This is consistent with Blanchflower and Oswald (2004) but different from Clark and Oswald (1996) and Clark (2003), who find the higher level of education reduces happiness possibly because education raises aspirations. Consistent with the literature, being unemployed is significantly associated with unhappiness. Money seems to buy greater happiness, as the level of happiness increases with income (except for one stratum).[8] In sum, the coefficients of most personal characteristics are consistent with expectation as well as the exiting

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[7] For most OECD countries and the US, the minimum point is around 45 (Di Tella and MacCullock 2008).

[8] Of course, the coefficients on the personal characteristics are not meant to capture the causal effect. For example, it may be that happier people are more likely to be married and earn more. But I am not interested in precisely establishing causality here for empirical determinants of happiness from personal characteristics.

Table 3 Impact of victimization on happiness

Explanatory variables	Ordered probit	OLS
Burglary	−0.169***	−0.144***
	(0.053)	(0.047)
Robbery	−0.171	−0.160
	(0.114)	(0.099)
Age	−0.068***	−0.058***
	(0.003)	(0.003)
Age squared	0.0007***	0.0006***
	(0.000)	(0.000)
Female	0149***	0.127***
	(0.020)	(0.017)
Marital Status:[a]		
Married	0.665***	0.576***
	(0.036)	(0.031)
Divorced or widowed	0.331***	0.287***
	(0.048)	(0.041)
Number of children	−0.004	−0.003
	(0.011)	(0.009)
Education:[b]		
Graduate school	0.242***	0.211***
	(0.064)	(0.053)
4-year university	0.184***	0.163***
	(0.035)	(0.029)
2-year college	0.186***	0.163***
	(0.033)	(0.028)
High school	0.063***	0.058***
	(0.022)	(0.019)
Work status:[c]		
Working	0.002	0.004
	(0.029)	(0.024)
Unemployed	−0.413***	−0.375***
	(0.089)	(0.080)
Retired	−0.050	−0.039
	(0.036)	(0.031)
Homeowner	0.081***	0.073***
	(0.023)	(0.020)
Municipality of residence:[d]		
Large city	0.013	0.014
	(0.025)	(0.021)
City	0.025	0.022
	(0.017)	(0.014)
Household income level:[e]		
1.5–2.5 million yen	0.086*	0.076*
	(0.052)	(0.046)

Table 3 continued

Explanatory variables	Ordered probit	OLS
2.5–3.5 million yen	0.233***	0.201***
	(0.034)	(0.029)
3.5–4.5 million yen	0.270***	0.232***
	(0.035)	(0.030)
4.5–5.5 million yen	0.316***	0.272***
	(0.051)	(0.044)
5.5–6.5 million yen	0.276***	0.240***
	(0.046)	(0.039)
6.5–7.5 million yen	0.325***	0.283***
	(0.043)	(0.036)
7.5–8.5 million yen	0.392***	0.339***
	(0.053)	(0.044)
8.5–10 million yen	0.446***	0.381***
	(0.040)	(0.032)
Over 10 million yen	0.569***	0.486***
	(0.035)	(0.029)
Unknown	0.275***	0.238***
	(0.030)	(0.025)
Observations	16,637	16,637
Pseudo/adjusted R-squared	0.033	0.082

* Significance at the 10 % level, ** at the 5 % level, and *** at the 1 % level. Standard errors clustered at the prefecture level are shown in parentheses. All variables except for age, age squared, and the number of children are categorical. Prefecture level variables included but not shown are log of average income per household, unemployment rate, crime rate, the fraction of young (<15) and old (>65) people, and population density. Prefecture and year dummies are also included but not shown here

[a] The omitted category is people who have never been married

[b] The omitted category is other education

[c] The omitted category is "not working for other reasons"

[d] The omitted category is Town or Village

[e] The omitted category is the lowest income category (0–1.5 million)

literature and give us some confidence in the significance of using the happiness data from Japan.[9]

Because the income variables are not continuous but categorical, calculating the compensating income required to maintain constant utility for victims is not straightforward. However, a simple comparison of the coefficients from the OLS estimates reveals that being burglarized is equivalent of moving from the household income level of 7.5-8.5 million yen to 2.5-3.5 million yen, which suggests that the compensating income for burglary is around 4–6 million yen, or approximately $35,000–$52,500 on the basis of the

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[9] Although I control for a great many characteristics of each respondent, the pseudo R-squared and adjusted R-squared are 0.03 and 0.08, respectively, meaning that these factors leave much of the variation (more than 90 %) in self-reported happiness unexplained. This is typical in the happiness economics literature, as much of the variation in happiness is due to a person's disposition or personality, which is not captured in survey data and thus unobservable.

exchange rate during the period 2000–2008. Of course, this compensating income is only suggestive, given that income and happiness are likely to be endogenous, but it illustrates the size of the coefficients.[10] As Cohen (2008) estimates the compensating income for a burglary is approximately $84,000 (with the 95 % confidence interval being $10,000–$322,000) for the United States, the compensating income for a burglary seems to be a bit lower for burglary victims in Japan.

Another interesting finding is that the coefficient of unemployment, which is −0.38 in the OLS, is much larger than the coefficient of the burglary variable. If we (somewhat naively) assume that unemployment and residential burglaries are purely exogenous events, then the well-being effect of being unemployed is more than twice that of being burglarized. To compensate unemployment, it would take a rise in household income of 7–10 million yen (moving from household income 0–1.5 million yen to 8.5–10 million yen), or approximately $61,000–$87,500. Though this amount, which people would need to feel indifferent about their experiences of unemployment, may sound rather large and should be viewed with care, this is very similar to the estimated $60,000 value in Blanchflower and Oswald (2004) for the United States.

3.2 Heterogeneous Effects of Victimization on Happiness

I now turn to the question of whether there is any difference in the impact of victimization on different groups. I am interested in two heterogeneous tests: income and homeownership. The effect of victimization is likely to be different among different income groups. The empirical literature suggests that there is diminishing marginal utility with income, as proposed in standard textbooks on economics (Frey 2008). The same proportional increase in income yields a lower increase in happiness at higher income levels. Then, the larger the amount of money stolen, the larger the negative effect of crime on happiness, *ceteris paribus*, but losing $100, for example, should hurt the poor more than the rich. However, perhaps the rich tend to lose a larger amount of money or valuable property in the events of burglary or robbery, and in that case the rich may be hurt more. Unfortunately, the JGSS do not contain information about the amount of money or the value of property stolen or taken. Additionally, or alternatively, high-income households can afford safety and the feeling of security. For example, they may install burglary alarms in response to victimization, and in this case the reduced fear of crime may mitigate the negative well-being effect of victimization. Overall, the author expects that negative well-being effect to be smaller for the rich.

The motivation for testing heterogeneity between homeowners and renters is that, though people often move from high crime areas, homeowners are not as mobile as renters because of the high transaction costs associated with homeownership. It has been found that burglary victims are more likely to move from their homes (Dugan 1999) and that rising crime rates in cities are correlated with city depopulation (Cullen and Levitt 1999),

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[10] A referee pointed out that moving from the household income level of 7.5–8.5 million yen to 2.5–3.5 million yen is also roughly equivalent to moving from 2.5–3.5 million yen to 1.5–2.5 million yen (the differences in the size of the coefficients are 1.38 and 1.25, respectively). This larger difference in the coefficient on income at a lower income level is not particularly surprising because of diminishing marginal utility with income, that is, the effect of income on happiness tends to get smaller as income increases. Unfortunately, I am not able to perform a detailed analysis due to the nature of the categorical income variables. Although the amount of money needed to compensate victims varies depending on their income, it illustrates that, whether burglary victims' income level is 2.5–3.5 million yen or 7.5–8.5 million yen, the compensating amount equals to a significant portion of income.

Table 4 Crime by income and by homeownership

	Low-income		Middle-income		High-income		Homeowners		Renters	
	N	%	N	%	N	%	N	%	N	%
Burglary										
Yes	120	3.7	117	2.7	100	2.8	389	2.9	94	2.9
No	3,105	96.3	4,252	97.3	3,440	97.2	13,052	97.1	3,102	97.1
Robbery										
Yes	39	1.2	29	0.7	34	1.0	108	0.8	33	1.0
No	3,186	98.8	4,340	99.3	3,506	99.0	13,333	99.2	3,163	99.0

These data refers to the JGSS, a cross-section of 16,637 people, 2000–2003, 2005, 2006, and 2008

but homeowners are less likely to be able to move in response to victimization. Also, in addition to their barrier mobility, a referee suggested that, homeowners' well-being may be hurt more than that of renters because there may be psychological damage from having one's own property intruded.

I use the split-sample approach and partition the sample across household income. Low-income individuals are those whose household income is below 3.5 million yen; middle income individuals are those whose household income is between 3.5 and 7.5 million yen; and high income individuals are those with household income above 7.5 million yen. The author acknowledges that this is somewhat arbitrary but argues that the cutoff is more or less reasonable, as the average household income was 5.6 million yen in 2005 (Ministry of Health, Labour and Welfare). Respondents who did not reveal their income levels are excluded from the analysis. Table 4 reveals that low-income individuals are more likely to be victims of burglary.[11] 3.7 % of the low-income individuals are victims of burglary while 2.7 % of the middle-income individuals and 2.8 % of the high-income individuals are victims of burglary. This is not particularly surprising because, while the wealthy may be more desirable targets, people with higher income can afford safety and invest in crime-deterring devices (e.g. alarm system for the house). This also can be viewed as negative spillovers for the poor, as the prospective burglars may target the poor if they avoid alarm systems in wealthy neighborhoods. The poor are also more likely to be victims of robbery. Again, this may be due to that the poor cannot afford to live in safe neighborhoods or use a cab after dark, for example, but the number of robbery victims is small when the sample is partitioned across different income levels, making it hard to draw any inference.

Table 4 also shows that the chance of being a victim is very similar for homeowners and renters. This is interesting because one may expect that homeowners have more incentives to protect their homes and keep the community safe. The quality of their communities is more important for homeowners, as community quality is capitalized into the value of their homes, and they have more incentives to improve the quality of their communities by forming neighborhood watch groups or by investing in "social capital" (DiPasquale and Glaeser 1999). One possible reason is that some homeowners sacrifice safety for lower housing prices by choosing to live in riskier neighborhoods where home prices are affordable. As long as the compensating price differentials are reflected more in housing prices than rental prices, on average homeowners and renters may face the similar risk of victimization.

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[11] In the United States, the rate of victimization for property crimes rises modestly with household income while that for violent crimes declines with income (Freeman 1999).

Table 5 Impact of victimization on happiness by income and by homeownership: ordered probits

Explanatory variables	Low-income	Middle-income	High-income	Homeowners	Renters
Burglary	−0.193*	−0.243**	−0.159	−0.192***	−0.038
	(0.101)	(0.112)	(0.121)	(0.069)	(0.137)
Robbery	−0.319	−0.171	−0.161	−0.232*	−0.025
	(0.217)	(0.202)	(0.190)	(0.128)	(0.159)
Observations	3,225	4,369	3,540	13,441	3,196

* Denotes significance at the 10 % level, ** at the 5 % level, and *** at the 1 % level. Standard errors clustered at the prefecture-year level are shown in parentheses. All specifications include the same variables listed in Table 3

Table 5 shows the results from ordered probits for different groups. To focus on heterogeneous effects, I only show the coefficients of the burglary variable and robbery variable for these subgroups.[12] The coefficient on the burglary variable is negative and statistically significant for the low-income group and the middle-income group. Consistent with the hypothesis, individuals in the high-income group are not hurt by the experience of burglary, as they are more likely to be able to afford to lose some money and also afford safety in response to victimization. Table 5 also shows the results when I break down the respondents between homeowners and renters. Consistent with the hypothesis, crime hurts homeowners. Indeed, only homeowners are adversely affected by the experiences of not only burglary but also robbery. Renters' happiness is not affected by being burglarized or robbed, probably because they have lower costs of moving and can move in response to victimization more easily.

4 Conclusions

Crime hurts victims financially and often physically. This paper examined the relatively unexplored link between subjective well-being and the direct experience of crime by looking at the reported happiness of crime victims in Japan. Being burglarized reduces reported happiness by 0.14 on a five-point scale. Put in dollar terms, I estimate the compensating income value for a household burglary to be approximately $35,000–$52,500. This paper also tested for heterogeneous effects of victimization on happiness. Happiness of the wealthy, who can afford to lose some money as well as buy some safety and security, is less likely to be affected by victimization. Crime victimization should hurt homeowners more than renters because homeowners are more likely to be "stuck" in the current area of residence due to their barriers to mobility and less likely to be able to move in response to victimization. Additionally, or alternatively, here may be psychological damage from having one's property intruded. I find that these hypotheses are strongly supported.

Another interesting finding in this paper is that, as a rough illustration, being burglarized is better than being unemployed in terms of lost happiness, as the coefficient on burglary is smaller than the coefficient on unemployment. This suggests that a policy that aims to improve labor market conditions may be a very effective welfare-enhancing policy, as improvements in legitimate labor market opportunities are expected to make

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[12] The results are available upon request.

financially-motivated crime, such as burglary and robbery, less attractive (Becker 1968; Gould et al. 2002), but I should emphasize that I do not mean to suggest that the government should spend more on, say, job training and less on crime prevention. Crime includes other violent crimes such as murder and sexual assault, which undoubtedly have greater adverse well-being effects on victims and their family, as well as residents of the neighborhood. Cutting on police or crime prevention may lead to an increase in other types of violent crime for which the psychological cost of victimization is much larger. Nevertheless, the results from this study are not without any policy implications. Since the rich do not seem to be hurt by the direct experience of crime victimization, reallocating resources from affluent neighborhoods to least advantaged neighborhoods, where residents are less likely to be able to afford safety and more likely to suffer from the loss of money or property, may be a very effective welfare-enhancing policy.[13]

One limitation of this study is that the victimization variables ask about events in the previous 12 months, and thus it is impossible to compare the short-term effect with the long-term effect, that is, we cannot test if the effect of victimization is transitory or permanent. This is an area of research that requires further investigation but is beyond the scope of this paper. This study is also subject to the usual limitations associated with cross-section data, that is, unobservable person-specific effects are not controlled. Finally, another limitation of this study is that this study cannot distinguish the effect of victims' pecuniary losses (i.e. property or cash stolen) and the effect of non-pecuniary factors, such as increased fear or trauma, as the data has no information about the amount of money or the value of property stolen or taken. However, a back-of-the-envelope calculation reveals that the average pecuniary loss is much smaller than the compensating income estimated above. In 2002, the total pecuniary loss from burglary was 107.37 billion yen, or approximately $857 million on the basis of the exchange rate in 2002.[14] The total number of burglary was 147,500, and thus the average loss of a burglary was about 728,000 yen, or $5,800. As the compensating income for a burglary estimated in this study is $35,000–$52,500, the current study suggests that victims' psychological non-pecuniary costs are substantially larger than the pecuniary losses. More research based on data with crime victimization details is necessary in order to estimate the magnitude of the psychological damage following criminal victimization.

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[13] I thank a referee for pointing out this policy implication.

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