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THE IMPACT OF INSURANCE GAMES ON INSURANCE ENROLLMENT: EXPERIMENTAL EVIDENCE FROM THE PHILIPPINES

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The Impact of Insurance Games on Insurance Enrollment: Experimental Evidence from the Philippines

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Abstract

This paper evaluates how playing an insurance game affects insurance enrollment. Insurance games not only allow individuals to learn about insurance, but also experience it. Based on a randomized experiment in the Philippines involving an insurance game in 2010, complemented by a follow-up survey in 2013, I find that playing the insurance game significantly increases real-life enrollment in the country's social health insurance scheme. Furthermore, I explore whether this result is related to changes in knowledge and attitude. When comparing the outcomes for the treated and the control groups, the game has no impact on either knowledge about or attitude toward insurance. However, when estimating the impact of the game on risk attitudes, I find that those who played the game in 2010 are significantly more risk averse than the control group.

Keywords: Financial literacy, insurance literacy, insurance education, social health insurance
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1 Introduction

Health shocks have significant negative effects on the poor's financial situation (Islam and Maitra, 2012; Wagstaff and Lindelow, 2014). Many low- and middle-income countries have implemented social health insurance schemes to alleviate the financial burden of healthcare. However, enrollment in such schemes tends to be very low, especially among the poorest segment of the population (Acharya et al., 2013). Studies on insurance enrollment in low-income populations reveal several prominent barriers to it, including limited financial literacy (Acharya et al., 2013; Eling et al., 2014).

"Financial literacy" is the ability to make informed decisions about financial planning, wealth accumulation, debt, and pensions (Lusardi and Mitchell, 2007a, 2007b, 2014). Recent studies show a strong correlation between financial literacy and financial behavior, including the use of bank accounts, credit, and insurance (Cole et al., 2010). Vast public and private resources have been devoted to financial literacy programs in developed and developing countries alike (Carpena et al., 2011). These programs, which are aimed at improving financial literacy, generally provide information on different financial products, such as credit, savings, insurance, and budgeting (Carpena et al., 2011). They range from programs that focus on traditional teaching methods to those that use interactive games designed to give participants hands-on experience with the products. Insurance literacy programs, including insurance games, are a subset of financial literacy programs and focus exclusively on insurance education (Olapade and Frölich, 2012).

One potential causal mechanism between financial literacy and insurance enrollment is that learning about insurance improves participants' insurance knowledge and changes their attitudes toward insurance products, which, in turn, leads to improved capacity to make financial decisions and, subsequently, increases insurance enrollment (Carpena et al., 2011; Tower and McGuiness, 2011; Olapade and Frölich, 2012). Evidence from financial literacy programs generally suggests that these programs increase knowledge about insurance products (Tower and McGuiness, 2011) and alter attitudes toward insurance (Olapade and Frölich, 2012). However, the overall effect on insurance enrollment is mixed, with some studies finding a positive effect (Cai et al., 2011; Giné et al., 2011) and others finding no effect (Bonan et al., 2012; Clarke and Kalani, 2012).

The primary motivation of this research is to better understand the impact of insurance games on insurance enrollment. The study is based on a 2010 experiment that allowed participants to

experience and learn about insurance via a participatory game and a follow-up survey conducted three years later in 2013.

The results from the study show that playing insurance games significantly increases real-life insurance enrollment in the Philippine Health Insurance (PhilHealth) scheme. PhilHealth is a social health insurance scheme that aims to provide universal health insurance coverage. PhilHealth has five different plans, one of which—the Sponsored Program—targets the lowest, income-wise, 25% of the Philippines population. Under the Sponsored Program, premiums are covered by the national government and local government units, but enrollment by the target population is voluntary (Silfverberg, 2014). The results confirm that those who played the game are more likely to enroll in the Sponsored Program than those who did not play the game.

To examine the channels of the impact, I consider several outcomes related to attitudes and knowledge. When comparing the outcomes for the treated and the control groups, I find that the game has no impact on insurance knowledge, attitude toward insurance, trust in insurance providers, or perceived probability of future disasters. However, when estimating the impact of insurance on risk attitudes, I find that the game has a significant effect on risk attitudes, with those who played the game in 2010 more risk averse than the control group. Previous studies show that risk attitudes change over time (Andersen et al., 2008) and that unfavorable shocks tend to increase risk aversion (Cameron and Shah, 2013; Gloede et al., 2012). If people are more perceptive of shocks as a result of participating in the game, then it is likely that, over time, we would see an increase in risk aversion among participants.

This paper makes three contributions to the literature. First, to my knowledge, this is the first study to look at how insurance games impact real-life insurance enrollment. Previous studies that have analyzed the impact of insurance games fall into three categories: (1) studies that examine preferences among a variety of hypothetical insurance choices (Patt et al. 2010; Norton et al., 2014), (2) studies that consider a real-life insurance product but only assess willingness to enroll (Cai and Song, 2013), and (3) studies that consider insurance enrollment in a real-life product but within an experimental setting (Gaurav et al., 2011). It is not clear whether preferences and willingness to enroll or even enrollment within an experimental setup translates into real-life insurance enrollment.

Second, this is the first paper to look at the long-run impact of an insurance game on behavior change. By taking a long-run view of how playing the game might have translated into insurance enrollment, the paper provides insight into behavioral change outside the experimental setup.

Third, the paper contributes to understanding the causal mechanism between insurance literacy and behavioral change, a topic that to date has been relatively unexplored (Carpena et al., 2011). This area of study deserves more attention, especially given the global growth of financial literacy programs in recent years.

The results here provide suggestive evidence of how financial literacy programs directly and indirectly influence insurance enrollment. Studies on financial literacy programs suggest that there is significant scope for improvement. The results of this analysis will thus be useful to insurers and policymakers engaged in using such programs to make insurance more familiar and understandable to the rural poor.

The structure of the paper is as follows. Section 2 discusses the extant literature on how insurance games influence insurance enrollment, and also includes a discussion of possible channels for this effect. Section 3 presents information on the institutional background, including the country and health sector context, PhilHealth's Sponsored Program, and the setting. Section 4 discusses the research design and the main hypotheses of the paper. Section 5 focuses on the descriptive statistics and empirical results. Section 6 concludes.

2 Related Literature

Improving financial literacy is motivated by the idea doing so will help households make better-informed financial decisions and result in an increased demand for welfare-enhancing financial services (Lusardi and Mitchell, 2007a, 2007b, 2014). Evidence from developed countries indicates a positive association between financial literacy and insurance demand (Hecht and Hanewald, 2010; Cappelletti et al., 2013).

Research on the link between financial literacy and demand for insurance in emerging countries also suggests a correlation between financial literacy and insurance demand (Xu and Zia, 2012; Cole et al., 2013). To evaluate the causal impact, several researchers have implemented financial literacy initiatives in the field. Financial literacy training programs tend to be one of two types—a traditionally taught program involving detailed explanation of

the product, or a participatory-based approach involving games (De Bock and Gelade, 2012). There is no consensus as to which type of program is most effective (Patt et al., 2010) (see Table A1 in the Appendix for a comprehensive list of studies).

The participatory approach programs involve insurance games that give participants a chance to experience insurance products in a setting where they are exposed to hypothetical shocks. Insurance games, which were developed out of laboratory experiments to study economic behavior, often involve multiple rounds so that individuals can learn to grasp complex situations with which they were previously unfamiliar (Carter et al., 2008). Carter et al. (2008) played a series of games in Peru and Kenya where almost 60% and 100%, respectively, of the participants purchased insurance in the game. Similarly, Patt et al. (2010) conducted insurance games with farmers in Ethiopia and Malawi and conclude that better understanding of insurance correlates with greater willingness to purchase insurance. Based on a randomized experiment in India involving financial education delivered via an insurance game, Gaurav et al. (2011) find evidence of a positive effect of the financial literacy program on insurance adoption. Cai and Song (2013), who conducted insurance games with randomly chosen farmers in China, also find that playing insurance games increases willingness to enroll in insurance by 9.6 percentage points. Finally, Norton et al. (2014), who conducted experimental games in Ethiopia, report that participants display a preference for insurance over other risk management strategies. The limitations of the aforementioned studies are that it is not clear whether preferences, willingness to enroll, or enrollment within an experimental setup translates into insurance enrollment in the real world.

There is a growing number of studies on financial literacy programs and their impact on demand for financial products, but the focus of this work is mostly on impact evaluation and not much attention is given to the mechanisms of impact (Carpena et al., 2011). Identification of causal mechanisms requires assumptions that might not necessarily hold.[1] Hence, papers attempting to explore causal mechanisms consider the impact of financial literacy training on possible channels (Carpena et al., 2011; Olapade and Frölich, 2012; Cai and Song, 2013). This paper provides additional insight into the causal mechanism.

[1] See Huber (2013) and Flores and Flores-Lagunes (2009) for a detailed look at why, even in experiments, causal mechanisms are not easily identified. The main challenge is that even under random treatment assignment, subsequent selection into the mediator is generally nonrandom, such that causal mechanisms are identified only when controlling for confounders of the mediator and the outcome (Huber, 2013).

In evaluating the channels, I first consider the impact of the game on insurance knowledge. The results from previous studies are mixed: Tower and McGuiness (2011) find that financial literacy seems to increase knowledge of insurance products; however, Olapade and Frölich (2012) and Cai and Song (2013) find no impact from insurance literacy on insurance knowledge. Next, I consider the impact of the game on insurance attitudes, particularly on insurance as a form of protection. Carpena et al. (2011) and Olapade and Frölich (2012) both note that while education might not have an immediate impact on knowledge, it might impact attitudes towards financial products more easily because many financial choices involve calculations and comparisons of costs and benefits, which can be difficult for individuals with low levels of education.

I also assess the game's impact on trust in insurance providers. Patt et al. (2009) examine the role of experimental games in establishing and building trust. They argue that insurance games are not only a way to gauge interest in the product but also are valuable for building trust. Moreover, in line with Cai and Song (2013), I also consider whether the game has any impact on participants' risk attitudes and their perceptions of the probability of future disasters. Cai and Song (2013) find that the positive effect of the game on willingness of purchase insurance is primarily driven by the experience gained during the game and not by other possible mechanisms such as changes in risk attitudes or changes in perceived probability of disasters.

3 Institutional Background

3.1. Country and Health Sector Context

The Republic of the Philippines is a lower-middle-income country with a population of 94.9 million (Chakraborty, 2013) and national average family income of 235,000 Pesos[2] (NSO, 2012). The country has experienced sustained economic growth since 2001, with growth in 2013 recorded at 7.2% (Chua et al., 2014). However, poverty is not decreasing in line with this growth, changing just barely from 26.3% in 2009 to 25.2% in 2012, suggesting that higher growth has yet to benefit many of the poor (Chua et al., 2014). The informal sector is large, comprising 50% of the population (Chakraborty, 2013). While health outcomes at the aggregate level have improved significantly in the Philippines, inequalities in health outcomes are worsening (Chakraborty, 2013).

[2] Equivalent to approximately USD 5375.12 as of August 2014, at an exchange rate of 1 USD = 43.72 Pesos.

The Philippines has one of the longest histories of social health insurance in Southeast Asia with its roots going back to the 1970s when the Philippines introduced the Medicare Program for formal-sector employees (Lavado, 2010). While Medicare was initially intended to expand coverage to informal-sector workers as well, the program was not successful at enrolling other groups (Chakraborty, 2013). In 1995, PhilHealth, the Philippines' social health insurance scheme, was established to provide universal health insurance coverage (PHIC, 2012).

PhilHealth has five plans: (1) the Overseas Worker Program for overseas contract workers, (2) the Employed Program for employees in the government and private sector whose premiums are jointly covered by the employee and the employer, (3) the Individually Paying Program for self-employed professionals who voluntarily contribute to the program, (4) the Lifetime Program for retirees and pensioners, and (5) the Sponsored Program for indigents, that is, the poorest 25% of the Philippines population, whose premiums are covered by the national government and local government units or by private individuals and companies (PHIC, 2012).

3.2. PhilHealth Sponsored Program

The PhilHealth plan most relevant for the sample in this study is the Sponsored Program, which is targeted at the poor. To enroll in the Sponsored Program, a person needs to go to the local office of the Department of Social Welfare and Development, which will then determine whether the individual is qualified to join the program and, if so, endorse the person appropriately (PHIC, 2012). To qualify, the person must belong to the lowest, income-wise, 25% of the Philippine population or be listed in the National Household Targeting System for Poverty Reduction. Those who are not listed can still avail themselves of the Sponsored Program via the "point-of-care enrollment program" (PHIC, 2013). This program targets the poor nonmembers who are confined in government hospitals. The premiums are paid by the sponsoring hospital. In addition, the local government unit can fully or partially subsidize the membership of persons not listed as poor. The list is based on a proxy means test that estimates family income based on various socioeconomic variables such as ownership of housing, education of the household head, livelihood of the family, and access to water and sanitation facilities, among others (Fernandez and Olfindo, 2011). While the local government units are encouraged to enlist their indigent constituents in the program, enrollment by households can still be considered voluntary, depending on how motivated households are to enroll in the program (Silfverberg, 2014).

Coverage: The Sponsored Program may cover households or individuals depending on the category to which a person belongs. The following members of the household are covered under PhilHealth without additional premiums: legal spouse, child or children, and parents who are 60 years old and above (PHIC, 2012).

Barriers to enrollment: Although coverage by the Sponsored Program has expanded over the past few years,[3] the majority of provinces experience mild to extreme leakages in the program. A significant number of families not part of the targeted indigent population are included and many truly poor households are excluded from the program (Silfverberg, 2014; PIDS, 2010). Factors that contribute to this under-coverage are related to lack of hospital services, availability of health professionals, and governance of the local government units that are ultimately responsible for enrollment. A study on underutilization of PhilHealth services reveals lack of knowledge about PhilHealth benefits as well as a cumbersome and unmanageable process as prime contributors to this situation (Faraon et al., 2013).

3.3. Setting

The study was conducted in the Iloilo province of the Western Visayas. Educational attainment in this province is slightly below the national average, poverty is higher, and public health insurance coverage is about average (Landmann et al., 2012). Average annual family income in the region is 204,000 Philippine Pesos (NSO, 2014). Iloilo province had a population of 1.8 million in 2013 and an average household size of 4.8 (NSO, 2014).

4 Research Design

4.1. Experimental Design

The study is based on a randomized experiment in 2010 that involved playing an insurance game. The experiment was originally designed to test the impact of different insurance products on solidarity in risk-sharing groups among rural villagers (Landmann et al., 2012). The game includes a risk component and an insurance component, and lasted approximately half a day. Risk is modeled using lotteries that involve rolling a dice. Every participant receives an initial endowment of 200 Pesos and keeps all or part of it depending on the outcome of the dice roll. After the lottery is played, insurance is introduced via offering alternative lotteries that are safer but come at a cost, thus reflecting the "real" world. The

[3] The actual coverage of the PhilHealth Sponsored Program is unclear; PhilHealth reports universal coverage. An independent study, however, estimates that PhilHealth coverage is only 52%, and the latest demographic and health survey reports that coverage is only at 38% (PIDS, 2010).

game is played in three rounds but the payout is based on the results of one round only, which is chosen randomly after all three rounds have been completed.

Before the start of the game, the game instructor explains the game to all participants and everyone receives an envelope with graphical instructions. The participants are asked a set of questions to test their understanding of the game. If a participant makes a mistake, the research assistants explain the setup and the concepts once more. Only those who answered all questions correctly were allowed to participate. Only a few participants were excluded.

4.2. Data Collection

The experiment was conducted in the fall of 2010. The target population consisted of low-income households in rural or partially urban areas. A two-stage random sampling procedure was employed whereby in the first stage a sample of 22 barangays (lowest administrative level in the Philippines, comparable to a village) was randomly selected, excluding high-income and urban municipalities. In the second sampling stage, households were randomly chosen within each barangay after obtaining a complete list of households from the barangay officials. Only the household head or the spouse of a household head was allowed to take part in the game. The sample size varied from 15 to 24 per village. The total number of observations is 512.[4]

A follow-up survey of the game participants was conducted at the end of 2013, together with a survey of a randomly selected control group from the same barangays. The survey collected information on socio-demographic characteristics; social networks; shocks and insurance purchase and experience; math, numeracy, and probability skills. Math skills were tested using a set of eight questions as in Cole et al. (2013), probability skills using a set of two questions as in Weller et al. (2013), and numeracy skills using a set of three questions as in Schwartz et al. (1997) (see Appendix, Table A2, for the questions).

Of the 512 original participants, 468 (89.4%) were contacted. At the time of the experiment in 2010, no control group was surveyed; hence in 2013, from each of the 22 barangays, a randomly selected sample of 18 to 24 individuals per barangay who had been living in the barangay in 2010 was chosen to create the control group. The control group is comprised of 575 observations. Table A4 in the Appendix provides information on attrition. About half the respondents who could not be reached had either migrated domestically or abroad; the other

[4] Of the total respondents invited, compliance was near perfect as almost all participated.

half could not be found either because they were not available at the time of the interview or because they had passed away.

4.3. Summary Statistics

As the game was played in 2010, during the follow-up survey, the game participants were asked how much of the game they remembered. More than 25% of the participants said that they remembered all or most of the game and over 60% reported remembering some of the game.

Household Characteristics

Panel A of Table 1 presents household characteristics for the treated and control groups. Column 1 presents the sample mean for a series of characteristics. Average household size is 4 and average annual household income is about 96,230 Pesos, which is far below the national average of 235,000 Pesos but similar to the average household income of the poorest 20% in the Philippines, which is 92,000 Pesos (NSO, 2012). More than 60% of the households reported having savings. More than a quarter of individuals reported skipping meals in the past three months for financial reasons, which provides an indication of poverty. A majority of respondents own their dwelling (88%), have access to safe drinking water[5] (69%), and have access to improved sanitation[6] (78%).

Individual Characteristics

In terms of individual characteristics, the sample is mostly female (66%) and married (80%), as seen in Panel B of Table 1. Close to half the respondents are household heads and more than 95% are involved in financial decision-making in the household. Respondents are around 44 years old and have completed 11 years of schooling. The average annual income is approximately 28,000 Pesos. Individuals scored very high on fatalism.[7] I also administered short tests of math, numeracy, and understanding probabilities. The average respondent correctly answered 6 out of 8 questions on math skills and 1 out of 2 questions on understanding probabilities. Respondents fared worse on numeracy skills, with the average respondent answering none of three questions correctly.

[5] Access to safe drinking water was assessed based on whether the households indicated having piped water, obtained water from a protected well, or used bottled water.

[6] Access to improved sanitation was assessed based on whether the households indicated having a private flush toilet or a closed pit latrine.

[7] Fatalism is measured by evaluating responses to two items: "I have little control over what will happen to me in my life" and "Good things tend to happen to other people, not to me or my family."

When asked if they had experienced any shocks (health, fire, theft, agricultural price changes, and weather) in the past three years, the average respondent said he or she had experienced more than one shock. About 64% of the respondents reported having experienced health shocks in the past three years. Other commonly experienced shocks were bad weather conditions affecting agriculture and livestock (approximately 40%) and agricultural price changes affecting agricultural inputs (approximately 30%) (see Table A5 in the Appendix). When asked about their most important coping mechanisms for health shocks, 64% of the respondents indicated borrowing money and 25% reported using own financial resources (see Table A6 in the Appendix). Only 3% indicated using insurance as a coping mechanism. A vast majority of the respondents (86%) noted lack of money as their primary reason for not buying insurance, followed by lack of trust (5%) (see Table A7 in the Appendix). Only about 2% of the respondents reported lack of knowledge as a reason for not buying insurance.

Table 1: Summary Statistics and Balance Check

This table reports sample means and tests for balance between the treated and control groups. Panels A and B give sample means for household and individual characteristics, respectively. Standard deviations are reported in parentheses. The *p*-values of a *t*-test are reported in Column 4. *, **, and *** indicate significance at the 10%, 5%, and 1% level respectively.

	Sample mean (1)	**Control group (2)**	**Treatment group (3)**	**Equality of means *p*-value (4)**
Panel A: Household characteristics				
Household size	4.17	4.09	4.27	0.18
	(2.13)	(2.11)	(2.16)	
Household income (annual) (in Pesos)	96230.02	92286.74	101180.7	0.33
	(146087.1)	(150798.7)	(139953.9)	
Log of household income (annual) (in Pesos)	10.83	10.77	10.90	0.18
	(1.57)	(1.66)	(1.44)	
Household has savings	0.61	0.61	0.61	0.98
	(0.48)	(0.48)	(0.48)	
Skipped meals in the past 3 months	0.28	0.27	0.29	0.56
	(0.44)	(0.44)	(0.45)	
Household owns house	0.88	0.88	0.87	0.43
	(0.32)	(0.31)	(0.33)	
Access to safe drinking water	0.69	0.69	0.70	0.88
	(0.46)	(0.46)	(0.46)	
Access to improved sanitation	0.78	0.77	0.79	0.28
	(0.41)	(0.42)	(0.40)	

Panel B: Individual characteristics				
Female	0.66 (0.46)	0.66 (0.47)	0.70 (0.45)	0.16
Married	0.80 (0.40)	0.79 (0.40)	0.81 (0.39)	0.33
Household head	0.46 (0.49)	0.48 (0.49)	0.44 (0.49)	0.18
Financially responsible	0.96 (0.19)	0.96 (0.20)	0.97 (0.17)	0.45
Age	44.13 (11.68)	42.06 (10.99)	46.72 (12.01)	0.00***
Education (years completed)	11.16 (3.60)	11.24 (3.67)	11.06 (3.5)	0.44
Individual income (annual) (in Pesos)	28039.22 (87279.52)	29334.43 (83507.37)	26413.13 (91862.89)	0.59
Log of individual income (annual) (in Pesos)	6.85 (4.68)	6.79 (4.75)	6.92 (4.59)	0.65
Fatalism (out of 14)	9.79 (3.03)	9.7 (3.06)	9.9 (2.99)	0.34
Math score (out of 8)	6.04 (1.81)	5.96 (1.83)	6.15 (1.78)	0.09*
Probability score (out of 2)	1.00 (0.76)	0.98 (0.75)	1.02 (0.76)	0.43
Numeracy score (out of 3)	0.62 (0.72)	0.59 (0.68)	0.65 (0.76)	0.20
No. of shocks experienced in the past 3 years	1.36 (1.07)	1.30 (1.08)	1.42 (1.07)	0.07*
Health shocks experienced in the past 3 years	0.64 (0.49)	0.61 (0.49)	0.67 (0.49)	0.05*
No. of barangay officials in contact with[8]	5.24 (4.78)	4.59 (2.77)	5.89 (6.12)	0.10
Observations	1,033	575	458	

In terms of social contacts, respondents, on average, reported knowing five barangay officials. Having contact with barangay officials is an important indicator of one's social status in the village and may also influence insurance enrollment as barangay officials carry out the administrative process of enrolling members in PhilHealth.

To test for balance across groups, Columns 2 and 3 of Table 1 present the means in the control and treatment groups, respectively. Column 4 presents the *p*-value for a *t*-test of the equality of means across the two groups. As to differences in household characteristics (Panel

[8] Only 73 respondents in the treatment group and 73 in the control group responded "yes" to knowing barangay officials.

A), the groups appear well balanced overall, as expected due to the randomized assignment to treatment. Furthermore, most of the individual characteristics are also balanced across the two groups, except for age, number of shocks experienced, and math ability (see Panel B of Table 1). Those in the treatment group are slightly older than the control group. One possible reason for this age difference is that in the 2010 treatment group, the household received the invitation and either the household head or the spouse could attend the game. In the 2013 control group, the person who was randomly selected was interviewed. If in the 2010 game the older household heads or older spouses attended the game, then age would be higher in the treatment group. Moreover, math ability is also slightly higher in the treatment group than in the control group. However, other indicators of mental ability, such as education, probability skills, and numeracy skills, are not different for the two group; hence, it is hard to explain the difference in math skills between the two groups.

In addition, the reported type of shocks experienced in the past three years is slightly higher in the treatment group than in the control group. The proportion of those in the treatment group reporting health shocks is higher than those in the control group. As these are self-reported shocks, it could be that the treatment and the control group perceive shocks differently due to their participation (or not) in the game. Olapade and Frölich (2012) also find that the shock history for death and hospitalization between the treatment and the control group is different and suggest that the control group might be underreporting such health events compared to the treated group, which might be a direct result of the treatment. Nevertheless, individual covariates are controlled for in additional specifications of the regression to assess robustness. The results do not change with the inclusion of covariates.

As income is an important criterion in determining enrollment status in the Sponsored Program, it is important that not only the means of individual income and household income across treatment and control groups are balanced, but also that overall distribution is similar. Graph A1 (see the Appendix) shows that distributions of both individual and household income look very similar.

5 Experimental Results

This section presents the results from the experiment, also referred to as the "game." Randomization of treatment assignment allows measuring the causal impact of the game on different outcome variables.

5.1. Impact on Insurance Enrollment

I first analyze the insurance game's impact on insurance enrollment and indicators related to enrollment. The average impact of the game on insurance enrollment will be estimated using the following equation:

$$Y_i = \alpha + \beta Game_i + \theta X_i + e_i$$

where Y_i is an indicator for whether or not the individual is enrolled in the PhilHealth scheme and $Game_i$ is an indicator variable that captures whether the individual played the game in 2010. X_i includes individual- and household-level covariates. In a simple randomized experiment, controlling for covariates that are likely to influence the outcome does not affect the expected value of an estimator of β, but it can reduce its variance (Duflo et al., 2006). Individual-level covariates include respondent's age, gender, education, household head status, whether the respondent is responsible for household financial decision-making, and measures of math, probability, and numeracy skills. Household-level covariates are household size and whether the household owns its dwelling. Covariates that might have been affected by the treatment are not included. The covariates are selected based on previous literature that highlights the relevance of these factors in insurance demand and take-up (Eling et al., 2014).

Table 2 presents OLS estimation results of Equation (1). Those who participated in the game in 2010 are 6.6 percentage points more likely to have enrolled in the PhilHealth scheme in 2013. The effect of the game is significant across all models in which individual- and household-level covariates are included as well. As a robustness test, I estimate an additional probit regression model, the results of which are presented in Table A8 in the Appendix. The model estimates confirm those of the linear probability model.

Table 2: Linear Regression: Impact of Game on PhilHealth Enrollment

This table reports the impact of the insurance game on respondents' decision to enroll in the PhilHealth program. The dependent variable is an indicator for whether the respondent enrolled in the PhilHealth program. Robust standard errors are given in parentheses beneath each point estimate. *, **, and *** indicate significance at the 10%, 5%, and 1% level respectively.

	(1)	(2)	(3)
Insurance game	0.066**	0.058*	0.054*
	(0.031)	(0.032)	(0.032)
Constant	0.454***	0.197	-0.004
	(0.021)	(0.119)	(0.132)
Individual controls		Yes	Yes
Household controls			Yes
Adjusted R^2	0.003	0.012	0.028
Observations	1,033	1,033	1,033
Mean of dep. var. (total sample)	0.483	0.483	0.483
SD of dep. var. (total sample)	(0.499)	(0.499)	(0.499)

Table 3 shows the change in PhilHealth enrollment from 2010 to 2013. There is a significant increase in the proportion of the treatment group enrolled in PhilHealth in 2013 compared to 2010.

Table 3: PhilHealth Enrollment Change Over Time for the Treated

This table reports the mean for PhilHealth enrollment in 2010 and 2013 for those who participated in the insurance game. Column 1 gives the baseline enrollment in the PhilHealth program in 2010 and Column 2 shows enrollment in 2013. Standard deviations are reported in parentheses. The *p*-values of a *t*-test are reported in Column 3. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Treatment 2010	**Treatment 2013**	**Equality of means p-value**
	(1)	**(2)**	**(3)**
PhilHealth enrollment	0.41	0.52	0.00***
	(0.49)	(0.50)	
Observations	457	457	

I also look at the game's impact on the length of PhilHealth enrollment, the results of which are set out in Table 4. The average length of PhilHealth enrollment is 2.24 years for the control group and 2.94 years for the treatment group, and the difference is significant. This is interesting given that the game was played exactly three years before the follow-up survey was conducted, and provides a positive affirmation of the game's impact on insurance enrollment.

Table 4: Linear Regression: Impact of Game on Length of PhilHealth Enrollment

This table reports the insurance game's impact on the length of PhilHealth enrollment. The dependent variable is the length of PhilHealth enrollment. Robust standard errors are given in parentheses beneath each point estimate. *, **, and *** indicate significance at the 10%, 5%, and 1% level respectively.

	(1)	(2)	(3)
Insurance game	0.708**	0.474*	0.465*
	(0.305)	(0.281)	(0.282)
Constant	2.242	-3.648	-4.967
	(0.173)	(1.370)	(1.389)
Individual controls		Yes	Yes
Household controls			Yes
Adjusted R^2	0.005	0.051	0.057
Observations	1,033	1,033	1,033
Mean of dep. var. (total sample)	2.556	2.556	2.556
SD of dep. var. (total sample)	(4.746)	(4.746)	(4.746)

Next, considering the game's impact on enrollment in the Sponsored Program, I find that those who participated in the game in 2010 are 8.5 percentage points more likely to have enrolled than those in the control group, as shown in Table 5. The effect of the game is also

significant across all models in which individual- and household-level covariates are included. The results from a probit regression model (see Table A9 in the Appendix) confirm those of the linear probability model.

Table 5: Linear Regression: Impact of Game on Sponsored Program Enrollment

This table reports the insurance game's impact on respondents' decision to enroll in PhilHealth's Sponsored Program. The dependent variable is an indicator for whether the respondent enrolled in PhilHealth's Sponsored Program. A linear probability model is used. Robust standard errors are given in parentheses beneath each point estimate. *, **, and *** indicate significance at the 10%, 5%, and 1% level respectively.

	(1)	(2)	(3)
Insurance game	0.085***	0.075**	0.071**
	(0.031)	(0.032)	(0.031)
Constant	0.351***	0.319***	0.136
	(0.020)	(0.117)	(0.129)
Individual controls		Yes	Yes
Household controls			Yes
Adjusted R^2	0.007	0.009	0.025
Observations	1,033	1,033	1,033
Mean of dep. var. (total sample)	0.389	0.389	0.389
SD of dep. var. (total sample)	(0.488)	(0.488)	(0.488)

5.2. Channels of Game Impact

As the insurance game's impact on PhilHealth enrollment is significant, I explore the possible channels through which this impact might occur. As discussed in Section 2, I consider the impact of the insurance game[9] on insurance knowledge; insurance, trust, and risk attitudes; and perceived probability of future disasters.

Insurance Knowledge

Insurance knowledge is measured by asking three questions related to payouts from health insurance in case of health shocks, adapted from Cole et al. (2013), who measure insurance knowledge in the case of rainfall insurance. The first question is: "Suppose you buy health insurance that costs 500 Pesos for one year and covers medical bills up to 1500 Pesos. If you do not fall sick this year, will the insurance give you back your money that you used to buy insurance?" The second question is: "If you fall sick and your medical bills are worth 1400 Pesos, will the insurance company cover any amount of your medical bills?" And the third question is: "If you fall sick and your medical bills are worth 1800 Pesos, how much of the

[9] For all the analyses, I also include the impact of the hypothetical shocks administered during the game on the different outcomes; however, none of the effects are significant. This is to be expected as the game was played three years previously; moreover, the shocks in the game were not framed such that respondents were free to give the shocks an individual-specific interpretation.

medical bills will the insurance company cover?" The results for the three knowledge items are reported in Panel A of Table 6. The coefficients of the game treatment are small, mostly negative, and insignificant. The results are in line with Olapade and Frölich (2012) and Cai and Song (2013), who also find no impact of insurance literacy on insurance knowledge. The results are robust to the inclusion of individual- and household-level covariates.

Table 6: Impact of Game on Other Outcomes

This table reports the impact of the game on different outcomes. In Panel A, the dependent variables are indicators for whether the respondent correctly answered the insurance knowledge questions. In Panel B, the dependent variable is a measure of the respondent's perceived protection from insurance, given by the total score based on a three-item questionnaire with a seven-point scale. In Panel C, the dependent variable is a measure of trust, given by the total score based on a four-item questionnaire with a seven-point scale. In Panel D, the dependent variables are measures of risk attitude where Risk 1 is measured by a Binswanger-type lottery and Risk 2 given by the total score based on a three-item questionnaire with a seven-point scale. In Panel E, the dependent variables are measures of perceived probability of future property and health disasters (with a score of 1 indicating a 10 percent probability). Robust standard errors are given in parentheses beneath each point estimate. *, **, and *** indicate significance at the 10%, 5%, and 1% level respectively.

Panel A: Dependent Variable = Insurance Knowledge

	Knowledge 1		Knowledge 2		Knowledge 3	
	(1)	(2)	(3)	(4)	(5)	(6)
Insurance game	-0.025	-0.012	-0.026	-0.033	0.000	-0.001
	(0.022)	(0.023)	(0.022)	(0.022)	(0.013)	(0.013)
Constant	0.165***	0.443***	0.157	0.202*	0.043***	0.016
	(0.016)	(0.112)	(0.015)	(0.107)	(0.009)	(0.070)
Individual controls		Yes		Yes		Yes
Household controls		Yes		Yes		Yes
Adjusted R^2	0.000	0.011	0.000	0.004	-0.001	-0.004
Mean of dep. var. (total sample)	0.154	0.154	0.145	0.145	0.044	0.044
SD of dep. var. (total sample)	(0.361)	(0.361)	(0.352)	(0.352)	(.204)	(.204)

Panel B: Dependent Variable = Insurance Attitude

	Attitude 1	
Insurance game	0.299	0.373
	(0.260)	(0.265)
Constant	16.221***	16.411***
	(0.179)	(1.072)
Individual controls		Yes
Household controls		Yes
Adjusted R^2	0.001	0.022
Mean of dep. var. (total sample)	16.353	16.353
SD of dep. var. (total sample)	(4.179)	(4.179)

Panel C: Dependent Variable = Trust

	Trust 1	
Insurance game	0.303	0.418
	(0.277)	(0.281)
Constant	15.082***	15.366***
	(0.189)	(1.124)
Individual controls		Yes
Household controls		Yes
Adjusted R^2	0.000	0.032
Mean of dep. var. (total sample)	15.216	15.216
SD of dep. var. (total sample)	(4.443)	(4.443)

Panel D: Dependent Variable = Risk Attitudes

	Risk 1		Risk 2	
Insurance game	0.282**	0.288*	0.549**	0.213
	(0.113)	(0.116)	(0.252)	(0.259)
Constant	3.456***	4.336***	16.603***	14.925***
	(0.077)	(0.502)	(0.174)	(1.003)
Individual controls		Yes		Yes
Household controls		Yes		Yes
Adjusted R^2	0.005	0.008	0.004	0.052
Mean of dep. var. (total sample)	3.580	3.580	16.847	16.847
SD of dep. var. (total sample)	(.057)	(.057)	(4.065)	(4.065)

Panel E: Dependent Variable = Perceived Probability of Future Disasters

	Probability 1		Probability 2			
Insurance game	0.108	0.154	0.216	0.206		
	(0.191)	(0.195)	(0.176)	(0.176)		
Constant	3.960***	3.486***	2.581***	2.341***		
	(0.126)	(0.830)	(0.116)	(0.710)		
Individual controls		Yes		Yes		
Household controls		Yes		Yes		
Adjusted R^2	-0.001	0.034	0.000	0.040		
Mean of dep. var. (total sample)	4.008	4.008	2.677	2.677		
SD of dep. var. (total sample)	(3.046)	(3.046)	(2.804)	(2.804)		
Observations	1,033	1,033	1,033	1,033	1,033	1,033

Insurance Attitude

To estimate attitudes toward insurance, I look at the extent to which respondents view insurance as a form of protection. More specifically, perception of insurance as a form of

protection is measured via a three-item questionnaire with a seven-point scale, as in Bosmans and Baumgartner (2005). The three items are: (1) Insurance policy can prevent problems; (2) With insurance policy, I obtain a sense of security; and (3) Insurance policy is able to protect me. The coefficient of the game treatment for attitude toward protection is insignificant. Including individual- and household-level covariates does not change the significance of the coefficients. This is in contrast to the finding of Olapade and Frölich (2012); however, those authors measure attitude immediately after the insurance literacy program, whereas this study looks at attitude three years after the game.

Trust

To measure trust, I look at trust in insurance providers. Trust in insurance is measured via a three-item questionnaire with a seven-point scale taken from Bruner et al. (2005). The three items are: (1) Insurance companies can be trusted; (2) Insurance companies are honest and truthful; and (3) I have great confidence in insurance companies. Panel C of Table 5 shows that the coefficients of the game treatment for trust are insignificant. The results are robust to the inclusion of individual- and household-level covariates. Thus, there is no evidence that the game treatment leads to increased trust in insurance. The results are in contrast to Patt et al. (2009); however, those authors only suggest that games might improve trust but provide no empirical evidence in support of this idea.

Risk Attitudes

In line with Cai and Song (2013), I consider the insurance game's impact on participants' risk attitudes. A variety of methodologies, ranging from simple to complex, are available to assess risk attitudes and choosing which methodology to employ depends on the study sample (Charness et al., 2013). In this study, I use both experimentally elicited risk preferences as well as a simpler method utilizing a questionnaire. For the first method, risk attitudes are elicited using a Binswanger-type (1980) lottery where participants are asked to choose between six lotteries (see Figure A1 in the Appendix) that vary in risk and expected return, as shown in Table A3 (see the Appendix). A second measure of risk attitudes, based on a three-item questionnaire with a seven-point scale, was also employed (Quintal et al., 2006). The three items are: (1) I avoid risky things; (2) I only make a decision when I think I can predict the outcomes; and (3) I would rather be safe than sorry.

The results from the first measure indicate that participating in the game leads to an increase in constant relative risk aversion of 0.28. Results from the second measure indicate that

participating in the game leads to a 0.5 increase in the risk aversion score; however, when individual- and household-level covariates are included, the significance of the second risk measure disappears.

Previous studies show that risk attitudes are not stable and that they change over time (Andersen et al., 2008). Moreover, several studies show that unfavorable shocks tend to increase risk aversion (Cameron and Shah, 2013; Gloede et al., 2012). If people are more aware of shocks either because of participating in the game or because they have enrolled in an insurance plan, then it is likely that, over time, we will see an increase in risk aversion for those who participated in the insurance game. Although the results suggest that the game treatment leads to increased risk aversion, it is not possible to disentangle whether this effect is purely due to playing the game or stems from enrolling in insurance after playing the game. Hence the results from this analysis need to be viewed with some caution.

Perceived Probability of Disasters

To assess perceptions of future disaster probabilities, the participants were asked two questions:[10] "What do you think is the probability of a disaster that leads to severe loss of property next year?" and "What do you think is the probability of a disaster that leads to at least one member of the family falling severely ill next year?" In line with Cai and Song (2013), to make the concept of probability more understandable to the respondents, a simple exercise involving 10 balls, each representing a 10% probability, was employed: participants chose the number of balls they thought represented the disaster probability. The coefficients of the game treatment for perceived probability of future disasters are insignificant. The results are robust to the inclusion of individual- and household-level covariates. Thus, there is no evidence that the game treatment leads to an increase in perceived probability of future disasters. This is in line with Cai and Song (2013), who also find that the insurance game has no impact on perceived probability of future disasters.

5.3. Heterogeneity of Treatment Effect

I next test the heterogeneity of the treatment effect to see whether the magnitude of the game effect varies across different socioeconomic characteristics, such as gender, marital status, age, education, and income. Previous research indicates that gender, age, education, income, and availability of risk-sharing alternatives, which might be higher for married couples given

[10] Cai and Song (2013) ask the following question: "What do you think is the probability of a disaster that leads to a more than 30 percent yield loss next year?" As the sample in this paper is not all farmers, the question on yield loss would not have been appropriate for all; hence, I modified the question to be more general.

that they can jointly face any risk, are relevant for insurance demand and take-up (Eling et al., 2014).

Table 7: Heterogeneous Response to Treatment by Socioeconomic Characteristics

This table reports the heterogeneous effects of participating in the insurance game on respondents' decision to enroll in PhilHealth's Sponsored Program. The dependent variable is an indicator for whether the respondent enrolled in PhilHealth's Sponsored Program. A linear probability model is used. Column 1 includes the main effect and interaction term for female respondents; Column 2 for respondents who are under the age of 40 years; Column 3 for married respondents; Column 4 for respondents who have not completed 10 years of schooling; and Column 5 for those who earn less than 69,000 Pesos annually, which is the average national income. Robust standard errors are given in parentheses beneath each point estimate. *** indicates statistical significance at the 1% level, ** at the 5% level, and *at the 10% level.

	(1)	(2)	(3)	(4)	(5)
Insurance game	0.045	-0.014	0.108**	0.152***	0.085**
	(0.055)	(0.066)	(0.039)	(0.044)	(0.040)
Female	-0.091**				
	(0.043)				
Game*female	0.063				
	(0.066)				
Married		0.030			
		(0.048)			
Game*married		0.121			
		(0.074)			
Education (<10 years)			0.081*		
			(0.042)		
Game*education (<10 years)			-0.064		
			(0.063)		
Income (<69,000 Pesos)				0.106***	
				(0.040)	
Game* income (<69,000 Pesos)				-0.126**	
				(0.061)	
Age (<40 years)					-0.078*
					(0.040)
Game*age (<40 years)					-0.025
					(0.062)
Constant	0.411***	0.328***	0.321***	0.295***	0.387***
	(0.035)	(0.043)	(0.025)	(0.028)	(0.028))
Adjusted R^2	0.009	0.012	0.008	0.011	0.013
Observations	1,033	1,033	1,033	1,033	1,033

Table 7 investigates the possible heterogeneous response to the game. Columns 1 and 2 report results of game effects for females and those less than 40 years of age, respectively. Column 3 shows the results of game effects for those who are married, Column 4 for those who have less than 10 years of schooling, and Column 5 for those who have annual household income

of less than the average national annual household income of 69,000 Pesos. The results show that individuals from poorer households are less likely to benefit from the game. Although poorer households and individuals are more likely to be negatively affected by any shock, they might also have less means to invest in insurance, thus preventing them from benefiting from the game. There are no significant differences in game effects by gender, marital status, or education. The results are robust to the inclusion of covariates, as shown in Table A10 in the Appendix. The coefficient and the level of significance for the interaction term with income do not change; coefficients for other terms change slightly but the levels of significance do not.

5.4. Alternative Explanations

The field of behavioral economics sheds some light on why we might see an impact of the game on real-life enrollment. Two insights from this field are particularly relevant in the context of games and decision-making.

The Role of Emotions in Financial Decisions

As Patt et al. (2009) note, there is significant evidence linking remembered, experienced, and anticipated emotions with the decision-making process. Hence, it is likely that insurance games that allow participants to experience shocks and insurance coverage, albeit in a hypothetical setting, might affect decision-making processes just by triggering some emotions, which, unfortunately, cannot be measured in this study. Moreover, simply participating in the game might make one more open to enrolling in insurance, especially when it is offered for free. In the absence of financial barriers, those who participate in financial literacy programs may be more likely to take-up insurance when they are offered the opportunity to enroll. Unfortunately, it is not possible to test this possible channel of personality change after playing the game, but it could explain how games affect enrollment in fully subsidized insurance schemes.

Nudging

A second theoretical insight comes from the work of O'Donoghue and Rabin (1999), who argue that while conventional economic models assume exponential discounting, that is, a person's relative preference for well-being at an earlier date over a later date is the same, a more accurate model is one that adopts hyperbolic discounting, that is, people put more weight on the present than on the future (Currie, 2006). In the case of enrolling in social programs where the costs are upfront, be these monetary costs or transaction costs arising

from putting together necessary documents, waiting in line, and so forth, and the benefits are in the future, the model provides useful insight (Currie, 2006). A person with time-inconsistent preferences thus might put off enrolling in a public health insurance program where the benefit might not even be needed until a future health shock occurs (Currie, 2006). To the extent that insurance games act as "nudges" that is, behavioral policy interventions that help people help themselves (Thaler and Sunstein, 2008), participating in games might give people the push they need to overcome procrastinating (Baicker et al., 2012).

6 Conclusion

This paper contributes to a small but growing field of research on how economic experiments influence real-life financial decisions. Economic experiments can be useful learning tools by not only providing information, but also allowing participants to experience the financial products. Insurance games as a type of financial literacy tool have the potential to increase participants' familiarity with insurance, hence leading to higher acceptance of insurance. While previous studies find a significant positive effect of insurance games on insurance take-up rates, the results might be applicable only in the short term. This study investigates the long-term impact on decision-making of participating in economic experiments. Moreover, I consider possible channels though which games might impact take-up rates, namely, insurance knowledge and attitudes. Future research looking at *utilization* of PhilHealth's services, instead of enrollment only, could provide a deeper understanding of the impact of such games. Such an analysis might also be useful for the design of financial literacy initiatives aimed at introducing the poor to insurance solutions.

A major challenge in studying the impact of financial literacy programs is designing the programs to be studied: What should they include? How long should they be? How should they be taught? The impact of a financial literacy training program depends not only on the structure of the program itself, but also on the population to which it will be offered. Moreover, there is no fixed definition of what financial literacy training means as it can vary from one-day consultation sessions in the field to extensive in-class training over a period of one to two years. This variability in programs makes it difficult to discover which features are most effective. This study enhances our understanding of what kinds of programs might be most useful to participants who have low levels of education and income.

Another important lesson from this study is that, as researchers, we can have a significant impact on our subjects, whether this is intended or not. As the field of experimental

economics is growing, this is an important aspect to keep in mind. While the main objective of the insurance game played in 2010 was to assess subjects' social behavior in light of insurance availability, the game had further consequences for the participants in the form of actual enrollment in insurance. This might be desirable in cases where the objective is to encourage enrollment so as to benefit the target population; however, in cases where insurance providers cannot be trusted, such an outcome would be less than desirable.

Appendix

Table A1: Traditional Versus Participatory Financial Literacy Initiatives

Authors	Research Design	Main Result	Effect of Financial Literacy
Traditional training programs			
Bonan et al. (2012)	Randomized insurance literacy module among households in Thies, Senegal	No impact of literacy module; however, marketing treatment significantly impacts take-up decisions	Not supporting financial literacy
Cai et al. (2011)	Randomized experiments involving educational program in China	Financial literacy when social networks are taken into account has large and significant effects on insurance decision-making	Supporting financial literacy
Carpena et al. (2011)	Randomized a five-week education module in India	Module did not increase participants' ability to perform financial calculation, but was effective in raising awareness of financial matters and in changing attitudes toward financial products	Ambiguous
Cole et al. (2013)	Randomized a short education module for rainfall insurance in India	No significant effect of the education module on demand	Not supporting financial literacy
Dercon et al. (2012)	Randomized experiment including financial literacy training led by a trusted community member	No impact of financial literacy training on insurance demand	Not supporting financial literacy
Giné et al. (2011)	Households grouped into clusters, then treated with either high-intensity or low-intensity financial literacy materials through comics	Farmers in high-intensity clusters were significantly more likely to purchase insurance upon receiving an informative comic; however, receiving a comic had a negligible impact on farmers in low-intensity clusters	Supporting financial literacy
Olapade and Frölich (2012)	A randomized controlled trial of insurance education through brochures in rural Philippines	Positive effect on attitude toward insurance for both treated households and non-treated households influenced by network effects; however, no impact on insurance enrollment	Ambiguous
Tower and McGuiness (2011)	An evaluation of a radio education campaign in Kenya	The radio campaign improved various aspects of understanding insurance	Supporting financial literacy
Participatory training programs			
Cai and Song (2013)	Randomized insurance game in rural China.	Insurance take-up increased by 48% on average	Supporting financial literacy

Carter et al. (2008)	Randomized experimental game in Kenya	100% take-up within the game; however, not sure whether decisions within the game translate into real-life decisions	Ambiguous
Gaurav et al. (2011)	Insurance education module in the form of insurance game administered to randomly selected farmers in Gujarat, India	Significant and positive effect on uptake of insurance, particularly for those with low initial levels of financial literacy	Supporting financial literacy
Patt et al. (2010)	A randomized experiment in Ethiopia and Malawi comparing conventional treatment to an interactive insurance game	Training through role-playing simulation games may be an important tool for improving understanding of insurance; however, it is unclear whether it outperforms conventional training approaches.	Supporting financial literacy

Table A2: Questions for Measuring Math, Probability, and Numeracy Skills

Math skills[11] (8 questions)
How much is 4 + 3?
If you have 20 Pesos and a friend gives you 50 Pesos, how many Pesos do you have?
How much is 35 + 82?
If you have 48 Pesos and someone gives you 58 Pesos, how much money do you have?
What is 3 times 6?
If you have four friends and would like to give each one four sweets, how many sweets must you have to give away?
What is 10% of 400?
Suppose you want to buy food that costs 37 Pesos. You only have one 100 Pesos note. How much change will you get?
Probability skills[12] (2 questions)
If the chance of getting a disease is 10%, how many people would be expected to get the disease out of 1,000?
If the chance of getting a disease is 20 out of 100, this would be the same as having a ____% chance of getting the disease.
Numeracy skills[13] (3 questions)
Imagine that we flip a fair coin 1,000 times. What is your best guess about how many times the coin would come up heads in 1,000 flips?
In a lottery, the chances of winning a 500 Pesos prize are 1%. What is your best guess about how many people would win a 500 Pesos prize if 1,000 people each buy a single ticket to the lottery?
In another lottery, the chance of winning a car is 20 in 1,000. What percent of lottery tickets win a car?

[11] See Cole et al. (2013).
[12] See Weller et al. (2013).
[13] See Schwartz et al. (1997).

Figure A1: Binswanger (1980) Lottery for Eliciting Risk Preferences

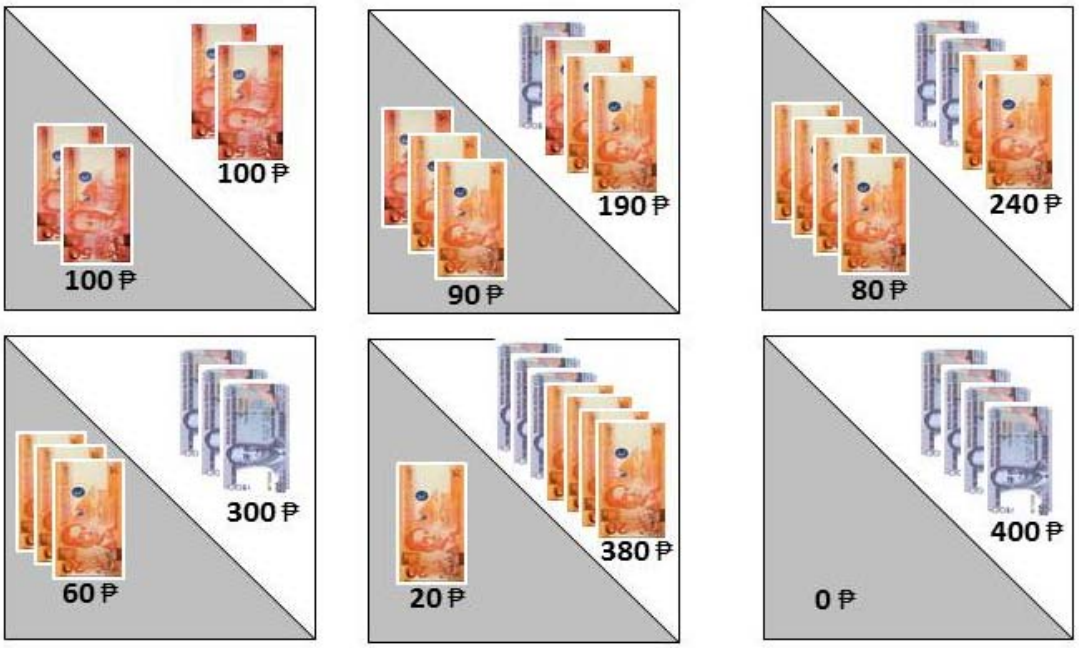


Table A3 Binswanger (1980) Lottery and Estimated Distribution of Risk Aversion

	Lottery characteristics			Parameter range of risk aversion ρ[a]	
Choice	High payoff (PHP)	Low payoff (PHP)	Expected value	Lower bound	Upper bound
1 (safe)	100	100	100	7.51	inf
2	190	90	140	1.74	7.51
3	240	80	160	0.81	1.74
4	300	60	180	0.32	0.81
5	380	20	200	0	0.32
6 (risky)	400	0	200	- inf	0

[a] Based on CRRA EU of the functional form $u(c) = (c^{1-\rho})/(1-\rho)$ with risk parameter ρ > 0 for risk-averse individuals.

Table A4: Attrition

Reasons for attrition	No. of individuals not found
Domestic migration	15
Foreign migration	13
Death	8
Not available for survey/away from barangay	7
Could not find/refused to be interviewed	11
Total	**54**

Table A5: Most Common Types of Shocks

Types of shocks	Percent of affected individuals
Health	63.79
Fire	0.77
Theft of assets	2.03
Bad weather conditions affecting agriculture	39.40
Price changes for agricultural inputs	29.72
Total observations (1,033)	

Table A6: Coping Mechanisms for Health Shocks

Types of coping mechanism	Percent of individuals
Own money	25.00
Borrow	63.84
Gift (village)	1.89
Gift (government/NGO)	1.73
Sell asset	3.14
Insurance	3.30
Consume less	1.10
Total observations (636)	

Table A7: Reasons for Not Buying Insurance

Reasons for not buying insurance	Percent of individuals
Lack of money	86.01
Not available	3.82
Lack of knowledge	2.08
No trust in insurance	5.20
No time	2.54
No need for insurance	0.35
Total observations (865)	

Table A8: Probit Model: Impact of Game on PhilHealth Enrollment

This table reports the effect of participating in the insurance game on respondents' decision to enroll in the PhilHealth program. The dependent variable is an indicator for whether the respondent enrolled in the PhilHealth program. Robust standard errors are given in parentheses beneath each point estimate. *** indicates statistical significance at the 1% level, ** at the 5% level, and *at the 10% level.

	(1)	(2)	(3)
Insurance game	0.066**	0.058*	0.055*
	(0.031)	(0.032))	(0.032)
Individual controls		Yes	Yes
Household controls			Yes
Observations	*1,033*	*1,033*	*1,033*

Table A9: Probit Model: Impact of Game on Sponsored Program Enrollment

This table reports the effect of participating in the insurance game on respondents' decision to enroll in PhilHealth's Sponsored Program. The dependent variable is an indicator for whether the respondent enrolled in PhilHealth's Sponsored Program. Robust standard errors are given in parentheses beneath each point estimate. *** indicates statistical significance at the 1% level, ** at the 5% level, and *at the 10% level.

	(1)	(2)	(3)
Insurance game	0.085***	0.076**	0.072**
	(0.031)	(0.032)	(0.031)
Individual controls		Yes	Yes
Household controls			Yes
Observations	*1,033*	*1,033*	*1,033*

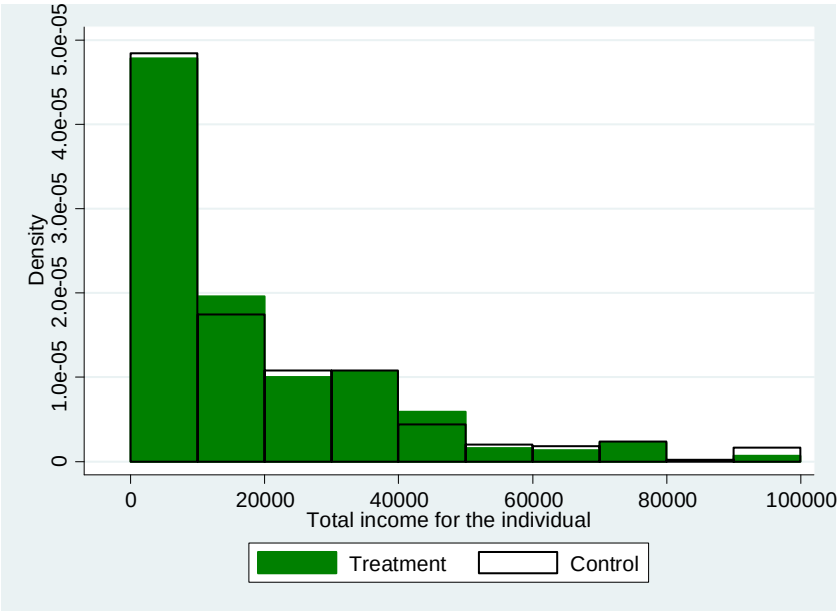
Table A10: Heterogeneous Response to Treatment by Socioeconomic Characteristics

This table reports the heterogeneous effects of participating in the insurance game on respondents' decision to enroll in PhilHealth's Sponsored Program with the inclusion of covariates. *** indicates statistical significance at the 1% level, ** at the 5% level, and *at the 10% level.

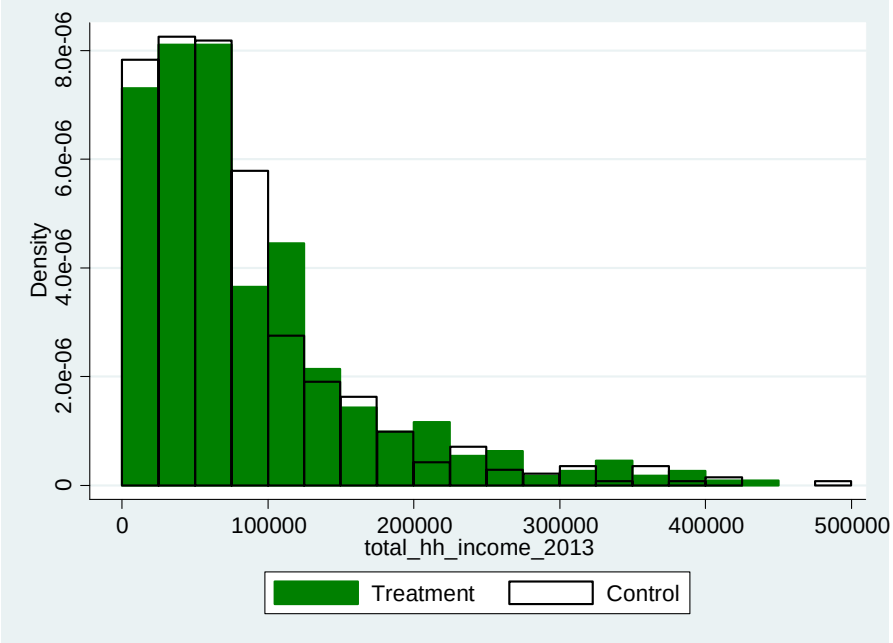
	(1)	(2)	(3)	(4)	(5)
Insurance game	0.027	-0.038	0.088**	0.135***	0.093**
	(0.054)	(0.067)	(0.040)	(0.045)	(0.041)
Female	-0.065				
	(0.052)				
Game*female	0.066				
	(0.065)				
Married		0.021			
		(0.050)			
Game*married		0.135*			
		(0.074)			
Education (<10 years)			0.054		
			(0.071)		
Game*education (<10 years)			-0.044		
			(0.063)		
Income (<69,000 Pesos)				0.136***	
				(0.040)	
Game* income (<69,000 Pesos)				-0.126**	
				(0.061)	
Age (<40 years)					-0.112*
					(0.058)
Game*age (<40 years)					-0.040
					(0.063)
Constant	0.158	0.111	0.077	0.027	0.411***
	(0.131)	(0.131)	(0.164)	(0.135)	(0.174)
Individual controls	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.025	0.030	0.024	0.034	0.029
Observations	1,033	1,033	1,033	1,033	1,033

Graph A1: Distribution of Income Across Treatment and Control Groups

Panel 1: Distribution of annual individual income across treatment and control groups



Panel 2: Distribution of annual household income across treatment and control groups



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