

# *Examining Social Insurance Participation among the Nomadic Population of Mongolia: A Survey of Herders in Nine Provinces*

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# **Examining Social Insurance Participation among the Nomadic Population of Mongolia: A Survey of Herders in Nine Provinces**

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**Abstract:** One-third of Mongolia's nomadic population lives in poverty, and their living conditions, which highly depend on the weather, are unstable. Therefore, it is vital for them to receive help, such as social insurance, from the government. However, only one-fifth of herders are enrolled in available social insurance programs, and it is important to examine the factors associated with their participation. Using an original survey of herders conducted in August–September 2020 in nine provinces, this study investigates the determinants of herders' participation in social insurance schemes. Several hypotheses regarding potential determinants of participation are tested, including (1) material conditions, (2) access to information, (3) descriptive social norms, and (4) political trust. The findings indicate that material conditions, particularly the number of livestock owned, descriptive social norms, and educational level are positively and significantly associated with herders' social insurance participation. Responses to open-ended questions support the findings of the quantitative analyses.

## 1. Introduction

This paper examines why some herders in Mongolia participate in the public social insurance program, but others do not. As of 2020, only 18% of herders are enrolled in social insurance, and it is an urgent task for the Mongolian government to uncover why the rate remains low and what it can do to increase enrollment. Using an original survey of approximately 800 herders conducted in nine provinces in August–September 2020, the paper examines the characteristics of herders who participate in the social insurance program.

Social insurance is one of the crucial contributory social protection programs to prevent or reduce poverty, particularly in developing countries. From a micro perspective, this participation mitigates financial risk caused by a disability, vocational accident, maternity, unemployment, illness, old age, or death throughout an individual's lifetime. For example, social insurance programs, such as a pension, unemployment, health, survivor benefits, and worker's accident compensation, stand as a critical concept to prevent financial hardship and poverty (Bonilla Garcia and Gruat 2003; United Nations General Assembly 2015; World Health Organization 2000).

At the country level, Mongolia has implemented social insurance schemes for over 20 years in two forms: compulsory and voluntary insurance.<sup>1</sup> According to the Social

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<sup>1</sup> According to the Social Insurance Law of Mongolia, persons employed on a contract basis by employers, organizations, or individuals, and government employees are subject to compulsory insurance. Those who work in informal sectors, including the self-employed, herders, freelance artists, and artisanal miners, are covered by voluntary insurance.

Insurance Law of Mongolia, social insurance funds consist of pension, health benefits, unemployment insurance, and insurance against employment injury and occupational diseases. The monthly contribution rate for compulsory insurance is 26–28% of the insured’s income, of which 13.5–15.5% is paid by employers and 12.5% by employees; on the other hand, those covered by voluntary insurance pay 16.5% of their monthly income.<sup>2</sup> Table 1 shows the contribution rates by type of social insurance in Mongolia. As for the participation rate, 75.9% of the economically active population—1.3 million people—participated in this program in 2019; the remaining 24.1% are uncovered, and most are herders and informal sector workers.<sup>3</sup> In particular, nomadic herders’ coverage is quite low: only 18% were enrolled as of 2020.<sup>4</sup>

[Table 1 here]

The national identity and unique culture of Mongolia are framed around nomadic life. Livestock, including typically a mixture of camels, cattle, horses, sheep, and goats, is the main asset for herders to earn their seasonal income,<sup>5</sup> which is directly associated

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<sup>2</sup> During the COVID-19 pandemic, both employers and the self-employed have been exempted from social insurance contributions (roughly from 2020 to July 1, 2021).

<sup>3</sup> “Herder” is defined as a citizen who earns their income from engaging in animal husbandry (Law on Employment Promotion of Mongolia).

<sup>4</sup> This data is drawn from the General Authority for Social Insurance and the National Statistics Office, Mongolia. As of 2020, there were 298,789 herders, of whom 54,268 were social insurance participants (18.16%).

<sup>5</sup> In total, livestock number 67 million as of 2020.

with socioeconomic shifts and climate change (Swiss Agency for Development and Cooperation 2017). For instance, herder households, on average, earn 71% of their income from cashmere production. For Mongolian export revenue, cashmere is ranked after coal, copper ore, crude oil, and iron ore (Uochi 2020). However, in recent decades, climate change has impacted the traditional nomadic culture; when natural disasters occur, such as droughts and heavy snow, namely *dzud*, or natural changes such as desertification and grass and water shortages, herders often experience the loss of livestock. These appear to be the major causes of herders' poverty.<sup>6</sup> Although nomadic herders contribute to the economy by providing animal products, their living conditions are challenging, and they have a higher chance of falling into poverty. Moreover, many herders remain uninsured. Therefore, understanding and improving herders' social insurance coverage is an urgent, crucial issue for the Mongolian government and society.

Despite its importance, little research has been done on this topic in the Mongolian context. The only empirical works available, to our knowledge, are survey-based studies by Oidov (2019) and Gombodorj et al. (2019), which examine informal workers' participation in social insurance and the pension planning of herders, respectively.

Some studies investigate informal workers' participation in social insurance or specific subcomponents of social insurance outside Mongolia (Clasen and Viebrock 2008; Nguyen and Knowles 2010; Ssempala 2018). However, no study has targeted the nomadic population whose method of earning income, ways of living, and values and norms could be substantially different from informal workers in urban environments. By studying

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<sup>6</sup> In Mongolia, a summer drought is followed by a severe winter, generally causing the serious loss of livestock (<https://www.wordsense.eu/dzud/>).

herders in Mongolia, this study seeks to understand the factors affecting informal workers' voluntary participation in social insurance. Furthermore, instead of finding individual-level characteristics correlated with their participation, our study builds upon prior research on social insurance participation in other disciplines (such as social psychology and political behavior) to present and examine several theoretically-driven hypotheses.

The rest of the paper is organized as follows. Section 2 presents our arguments and hypotheses. Specifically, we focus on four sets of explanations that may affect herders' participation in social insurance, including their material conditions, access to information, social norms, and trust in government. Section 3 describes the survey of herders conducted in nine provinces. Section 4 outlines the findings: herders who (1) have better material conditions (i.e., own more livestock), (2) have relatives and friends who are already social insurance participants, and (3) are more educated have a higher probability of participating in social insurance. On the other hand, we do not find evidence that participation is influenced by herders' access to information regarding social insurance or how much herders trust the government. Following the quantitative analyses, we report some insights from the open-ended questions regarding what herders believe to be the advantages of enrolling in social insurance and their concerns about such programs. Section 5 concludes.

## **2. Argument and Hypotheses**

This section introduces our arguments on individuals' participation in social insurance programs. For each argument, we review relevant prior research and present our hypotheses. In particular, we look at four categories of determinants regarding individuals' social insurance participation: material conditions, access to information, social norms, and political trust.

## **2.1 Material Conditions**

Prior research suggests that material conditions affect individuals' participation in social insurance programs, identifying specific factors such as contribution rates relative to income, the seasonal fluctuation of income, and beliefs about future benefits (Van Ginneken 1999; Obadha, Colbourn, and Seal 2020; Park and Cho 2019).

### *1. Level of Wealth*

First, people would not be able to participate in social insurance if the contribution rate is higher than they can afford or are willing to pay. For example, Wang et al. (2005) find that among farmers in rural areas in China, income is positively associated with the rate of participation. Studies conducted in Egypt and the United States also reveal similar results—employees are unwilling to pay a high rate of social insurance contributions (Munnell, Sunden, and Taylor 2001; Sieverding 2016). In the context of Mongolian herders, we expect that wealthy individuals can afford to pay for the contribution and therefore have a higher participation rate than those who are not wealthy. Therefore, our first set of hypotheses states:

H1.1: Herders who are wealthier participate in social insurance at a higher rate.

H1.2: Herders who have not enrolled in social insurance perceive that the contribution rate is too high.

### *2. Seasonal Income Fluctuations*

Building upon this argument, an important consideration for herders is that their income is not stable across seasons within a year. Their income tends to be higher in the spring—when they have earnings from cashmere and wool sales—and in the fall—when they have earnings from meat sales (Swiss Agency for Development and Cooperation

2017). Thus, we expect that those who report seasonal fluctuation concerns will participate at a lower rate due to their difficulty making payments:

H1.3: Herders who have seasonal income fluctuation participate in social insurance at a lower rate.

In addition, we asked in the survey *why* herders chose not to participate in social insurance programs. If seasonal income fluctuation is the major obstacle, they would mention it as a reason why they have not enrolled in the program. Thus, our second hypothesis is:

H1.4: Herders who have not enrolled in the program believe that seasonal income fluctuations make it difficult to afford social insurance contributions.

### *3. Beliefs About Future Benefits*

Finally, beliefs about future benefits may influence people's present decisions to enroll in insurance programs. Anecdotal evidence and some recent newspaper reports in Mongolia suggest that some people do not believe they will be likely to receive benefits in the future. For example, articles published by the *National Post* (Munkhtungalag, 2019a, 2019b) report that contracted employees (compulsory insured) tend to express optimism about future benefits from the social insurance program and therefore are willing to contribute (which is deducted from their salary). One article also covers an episode where those who paid into the social insurance program would not receive any benefits if they pass away before or shortly after reaching the age to start receiving a pension. A comment by a reader of this article provides a useful illustration: "My husband passed away at the age of 55 after paying a social insurance contribution for 35–36 years of hard work. Unfortunately, he did not receive a pension. We, the family and children, could not receive any benefits from his social insurance."



For our analysis, we conducted a small pilot phone survey from 20 herders while developing the survey questionnaire. We observed that (1) many of the pilot interviewees did not understand social insurance well, (2) those who were not insured did not believe that they could benefit from social insurance due to a lack of trust, and (3) many did not believe that they would live long. The above observations suggest that people's expectation about future benefits influence their decision to pay for social insurance contributions. Thus, the following hypothesis is tested:

H1.5: Herders who have not enrolled in social insurance believe that they will not receive future benefits.

## **2.2 Access to Information**

Another important determinant of social insurance participation is information. Some studies of retirement plans and voluntary health insurance decisions show that information has a positive correlation with individuals' decisions to participate in social insurance programs (Capuno et al. 2014; Chan and Stevens 2008; Duflo and Saez 2003; Khan and Ahmed 2013; Liu, Sun, and Zhao 2014; Mastrobuoni 2011; Wagstaff et al. 2016). For example, Duflo and Saez (2003) discuss the role of information and social interactions on retirement plan decisions, finding that small incentives encourage individuals to obtain information on retirement savings plans; they also reveal that those who attended an information fair on retirement saving benefits were more likely to enroll in a 401k plan than those who did not.

Nomadic herders in Mongolia face an information barrier and do not have much information on social insurance. Due to budget constraints, social insurance workers also cannot frequently hold information sessions across the country. Therefore, herders have limited information, which may explain their low rate of participation. The above

discussion implies that if herders do not have enough accurate information on social insurance, they are less likely to enroll in this program. Therefore, we test the following hypothesis:

H2: Herders with better access to information are more likely to participate in social insurance than those with limited information channels.

### **2.3 Social Norms**

The following explanation focuses on social norms, “the informal rules that govern behavior in groups and societies” (Bicchieri, Muldoon, and Sontuoso 2018). According to social psychological research, there are two types of social norms: injunctive and descriptive. Injunctive norms refer to people’s perceptions of desirable/non-desirable actions, while descriptive norms are their perceptions of what most others do in their surroundings.

Social and political psychological studies have tested the roles of descriptive norms in various contexts (Agerström et al. 2016; Cialdini et al. 2006; Cialdini and Jacobson 2021; Cialdini, Reno, and Kallgren 1990; Gerber and Rogers 2009; Gerber and Yamada 2009; Goldstein, Cialdini, and Griskevicius 2008; Melnyk et al. 2011; Shang and Croson 2009). For instance, Gerber and Rogers (2009) examine the effect of descriptive norms on the intention to vote in an upcoming election in the United States, finding that those receiving information that many people vote (voter turnout is high) were more likely to express their intention to vote than those who received information that voter turnout is low.

Given the importance of descriptive norms in various contexts, we expect that they play an essential role in nomadic herders’ decision to participate in social insurance. In the case of herders in Mongolia, if their relatives, siblings, and neighbors participate in

social insurance programs, it is expected that they are more willing to participate. Hence, the following hypothesis can be stated:

H3: Herders whose family members, friends, and neighbors participate in social insurance programs are more likely to be social insurance participants than those whose family members, friends, and neighbors do not participate.

## **2.4 Political Trust**

Social insurance participation might be associated with trust, particularly political trust. Empirical studies of political trust categorize trust into two types—social trust and political trust (Choi and Woo 2016; Henjak 2017; Newton, Stolle, and Zmerli 2018; Norris 2017). According to Choi and Woo (2016), political trust (impersonal) refers to a general belief in political institutions and actors, while social (personal) trust is a belief in others in the society based on interpersonal confidence.<sup>7</sup> Previous studies have emphasized that political trust directly influences government policies (Rudolph and Evans 2005; Scholz and Lubell 1998; Tyler and Degoey 1995). For instance, using a survey among US taxpayers and tax return data, Scholz and Lubell (1998) argue that those with less trust in the government are less likely to comply with their obligation to pay taxes. In the context of Mongolia, political trust, especially among herders, seems low. Herders seem to have a stronger attachment to their provincial origins, and they support and trust individual politicians instead of political parties or government institutions.

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<sup>7</sup> Analyzing a relationship between partisanship and institutional trust in Mongolia, Jacob and Schenke (2020) find that interpersonal trust tends to lead to a higher level of political trust.

Low levels of political trust may result in less participation in social insurance for the following reasons. First, if one does not believe that the government is trustworthy and responsive to public demands, they might feel that programs run by the government would not provide the promised benefits. Consequently, they might believe that social insurance benefits would not be paid many years later. Alternately, even if benefits are paid, the amount could be substantially lower than promised. They might also perceive rampant corruption in social insurance programs. For example, some herders we interviewed mentioned that they do not have confidence in the government because it might not provide further benefits from the insurance fund.

Second, herders might expect individual politicians to deliver benefits to them personally rather than generalized programs like social insurance. For example, one member of parliament, whose constituency is his birth province, firmly promised to initiate a particular social insurance policy for herders during his election campaign. Later on, social insurance coverage in this province declined compared to others. It is plausible that herders voted for a candidate from the same province due to the belief that this candidate's promises would be more reliable than general government programs. As a result, the following hypothesis is tested:

H4: Herders who have a higher level of trust in government have a higher participation rate in social insurance.

### **3. Data and Method**

#### **3.1 Basic Features of the Survey**

We test our hypotheses using the results of a survey of herders conducted in 2020 in collaboration with the General Authority for Social Insurance of Mongolia (GASI). The

study covered all four regions of Mongolia: Western, Khangai, Central, and Eastern. We randomly selected two provinces (*aimag*) from each region except for the Central region, from which three provinces were randomly selected.<sup>8</sup> Social insurance workers conducted the survey on the ground. Within each province, the provincial branch office of the GASI selected the districts (*soums*) where the survey would take place based on the availability of social insurance workers. There is only one social insurance worker in charge of each district, and they tend to have annual leave in the summertime. Therefore, the provincial branch offices decided the locations where the survey would be conducted.

The survey was undertaken from August to September 2020. We distributed a total of 900 survey questionnaires, 100 to each province, and collected 818 responses. In total, 117 districts from nine provinces were selected as survey locations. Approximately 5–10 respondents from each district participated in the survey. We prepared instructions and distributed them to social insurance workers explaining the procedure of the survey in order to minimize their burden. We sought to select working-age herders in each district randomly. In particular, the social insurance workers in charge of the districts visited herder families and distributed the paper-based self-administered questionnaires. Participation was voluntary, and only those who agreed participated. The top page of the questionnaire explained the purpose of the survey; it then clearly stated that it was done solely for academic purposes, responses would be kept confidential, and participation was completely voluntary. The social insurance workers collected the responses and sent them

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<sup>8</sup> Mongolia is divided into three administrative tiers including *aimag* (province), *soum* (district), and *bagh* (subdistrict). The nine provinces include: Bayan-Ulgii, Dornod, Dundgobi, Khentii, Khuvsgul, Tuv, Umnugobi, Uvs, and Uvurkhangai.

back to the provincial branch offices. We then received the soft (scanned) copies after the responses were submitted to the GASI by the provincial branch offices.

### **3.2 Survey Questions**

We developed the survey questionnaire by conducting several pilot surveys, including phone interviews of 20 herders and a paper-based survey of 18 herders. Based on the feedback from the pilot participants, the questionnaire was finalized. The survey materials consisted of a cover letter, the contact information of the survey team, and the survey questions. The central part of the survey consisted of four sections: (1) general information; (2) questions regarding social insurance participation; (3) intention to participate in a social insurance program in the future; and (4) demographic information. The questionnaire was given to the respondents in the Mongolian language. An English translation is reported in Appendix A.

#### *1. Dependent Variable*

The dependent variable is whether the respondent is enrolled in the social insurance program, and the following question is asked: “Are you currently enrolled in the social insurance program?” We construct a binary variable, which takes the value of one if the respondent participates in the social insurance program and zero if not. Since the outcome variable is binary, we use logit regressions with the following independent variables and control variables to examine factors affecting the decision of herders to enroll in social insurance.

#### *2. Independent Variables*

The first set of variables is material conditions. We argue that wealth, seasonal income fluctuations, and beliefs about future benefits may affect social insurance

participation. Wealth is measured by income (ordinal variable) and the number of livestock. For the latter, we asked respondents to report the number of the five herd animals: camels, horses, cattle, sheep, and goats. According to the National Statistics Office of Mongolia, for accounting purposes, one sheep is equivalent to five camels, seven horses, six cattle, and 0.9 goats. We follow these coefficients to calculate the number of livestock owned by the respondents. Seasonal income fluctuations are measured by the perceived stability of income across seasons. Beliefs about future benefits and whether they think the contribution rate is too high are measured by directly asking what concerns the respondents have about social insurance.

Second, to measure the access to information, we asked the respondents from which sources they acquired information about social insurance. We presented several answer choices—including neighbors/friends, TV/radio, *Bagh* governor, SNS, website of the social insurance authority, social insurance worker, and newspaper—and asked them to select as many answer choices as they like. For each source of information, we create a binary variable indicating whether they acquired information from that source.

Third, for social norms, we use the responses to the following question: “Do your relatives, siblings, and/or neighbors participate in social insurance?” The answer choices include “most of them,” “some of them,” “none of them,” and “I do not know.” If social norms matter, those who say most of their family members and neighbors participate in social insurance should participate at a higher rate.<sup>9</sup>

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<sup>9</sup> In addition, we incorporated a survey experiment into our survey: respondents were randomly assigned to two groups, one receiving the descriptive norm of high participation rate in social insurance and the other the descriptive norm of low participation rate. The

Finally, we examine the correlation between political trust and social insurance enrollment. The independent variable – political trust – is measured by the respondent’s level of confidence in the government using a five-point Likert scale with the following categories: “trust,” “somewhat trust,” “neither trust nor distrust,” “somewhat distrust,” and “distrust.” As an alternative measure, we use one’s trust in the social insurance authority since their trust in the specific public entity handling social insurance could be more influential than their generalized trust in government when deciding to participate. This variable is also measured on a five-point Likert scale.

### *3. Control Variables*

Previous studies have found that demographic characteristics are significantly associated with social insurance enrollment (Brimblecombe and McClanahan 2019; Kapologwe et al. 2017; Lee et al. 2018; Persson 2020; Vlachantoni and Falkingham 2012). For example, according to Vlachantoni and Falkingham (2012), women tend to be poorer in old age than men because women who work in informal sectors are less likely to enroll in pension insurance in Asia. Kapologwe et al. (2017) find that family size and marital status significantly influence the health insurance participation rate, while Lee et al. (2018) argue that citizens who have a higher level of education participate in health insurance in China at a higher rate. Therefore, we control for the following characteristics of herders: gender, age, marital status, education level, and family size.

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results, reported in a separate paper, reveal that the descriptive norm of high participation rate is associated with greater willingness to participate in social insurance in the future (Byambaa and Yamada 2022)



#### *4. Summary Statistics*

Table 2 reports the summary statistics for the entire sample as well as for participants and non-participants separately. The total number of respondents is 818; 57.1% (467) are participants, and the remainder are non-participants of the social insurance program. Regarding independent variables, a herder family has 694 heads of livestock on average. The most popular channels to access information are social insurance workers and TV and radio for both social insurance participants and non-participants; the average trust in government, in general, is 3.38, while that for the social insurance authority is 3.90.

[Table 2 here]

## **4. Results**

### **4.1 Main Results**

The results of logit regressions are presented in Table 3, depicting the effects of the independent variables on herders' chance of being insured. There are five models: Model 1 is the baseline model that includes only theoretical variables. Models 2 and 3 allow us to identify how each factor affects social insurance coverage by controlling for the demographic characteristics of herders. In Models 1 and 2, we report robust standard errors. In Model 3, considering the likely possibility that some unobserved factors uniformly impact all the respondents in the same province, we cluster standard errors by province. In Models 1 through 3, one of the theoretical variables, political trust, is not included because of the considerable number of non-responses.<sup>10</sup> In Models 4 and 5, we

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<sup>10</sup> Presumably, many people did not answer the questions measuring political trust because the questions were somewhat sensitive. They might have perceived that revealing

replicate Model 3 by adding two measures of political trust, one by one. In Model 4, we include respondents' trust in government, while in Model 5, we include trust in the social insurance authority. As we noted above, many respondents declined to provide their answers to these questions.

[Table 3 here]

We first focus on the regression results found in Model 3, which includes all the theoretical (except for political trust) and control variables, with clustered standard errors. The results demonstrate that material conditions, access to information, and social norms have positive and statistically significant associations with herders' participation in social insurance programs. Models 4 and 5 show that neither measure of political trust is linked to the participation of herders in social insurance. The findings are consistent with H1.1 (material conditions) and H3 (social norms); they also partially support H2 (information). However, H1.2 (seasonal fluctuations) and H4 (political trust) are not supported.

As for control variables, the level of education is positively and significantly correlated with the enrollment of herders. In contrast, gender has a negative impact. Herders' participation is also associated with where they live, as some provincial dummies are highly significant. The number of children in herders' families is positively

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their level of trust may result in negative consequences such as lower chances of receiving government benefits.

associated with participation status. Other control variables are not significantly associated with social insurance participation.<sup>11</sup>

## 4.2 Marginal Effects

Since the coefficients from the logit regressions are not directly interpretable, we first estimate the average marginal effects, which tell us the change in the predicted probability that the dependent variable takes the value of one (the probability of a herder being a participant) as the independent variable changes by one unit. The average marginal effects are shown in Appendix C. Interpreting the size of the effect based on Model 3, a 100% increase in the number of herders (doubling the number) is associated with a 5.84 percentage point increase in the predicted probability of participation.<sup>12</sup> A one-unit increase in a relative's participation status (e.g., from "some of them" to "most of them") is associated with a 12.1 percentage point increase in the dependent variable; and the predicted probability changes by 6.69 percentage points when the education level increases by one category (e.g., from middle to high school). Thus, the size of the effect

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<sup>11</sup> Additional analyses are reported in Appendix B. We check the possibility of a non-linear relationship between the number of livestock and the dependent variable by inserting the squared and cubic terms; treating monthly income as an ordinal variable despite the large number of missing observations; and examining the interaction effects between the number of livestock and additional variables.

<sup>12</sup> Since the independent variable is in the natural log, a 1% increase is associated with the dependent variable by 0.01 times the coefficient. Thus, a 100% increase in the independent variable would be associated with a change in the dependent variable by the size of the coefficient.

appears substantively significant. See Figure 1 for the change in the predicted probability that the dependent variable takes the value of one as the value of these variables (number of livestock, relative's participation status, and education level) changes.

[Figure 1 here]

### **4.3 Reasons for Participation and Non-Participation**

We find that those who have more livestock, those whose relatives and friends are already social insurance participants, and those who have a higher level of education have a higher chance of participating in social insurance. Here, we explore why respondents have chosen or refused to participate in social insurance and their concerns about the program. By examining self-reported reasons and concerns, we seek to supplement our regression analyses to understand deeper reasons why herders participate or avoid social insurance. In other words, we move from the “who participates” question to the “why participate (or not)” question. The relevant questions in the questionnaire reported in Appendix A are Questions 3, 4, 18, 20, and 21; the results are reported in Appendix D.

#### *1. Social Insurance Needs*

Many respondents agree that they need social insurance (Question 3): 88.31% strongly agree or agree it is necessary to have social insurance. However, why would herders think they need social insurance? In order to understand their reasons, we asked the following question: Why do you think you need social insurance? The most frequently selected reason was to receive an old-age pension after retirement (selected by 83.9% of the insured and 75.2% of the uninsured, respectively), followed by the protection against sudden risks. The second-most popular answer was protection against sudden risks for the participants (54.0%) and, for non-participants (49.5%), protection of health.

We also check whether the responses are different between those who never participated and those who discontinued their contribution. We notice that: (1) for each item except “I do not know well,” the percentage of participants selecting the item is higher than non-participants; (2) among non-participants, those who contributed in the past but dropped out are more likely to select “protect against sudden risks,” “receive an old-age pension,” “protect my health,” and “get a loan from the bank” than those who never participated. Thus, a significant fraction of the respondents are aware of some benefits of social insurance; furthermore, the percentage is higher among participants and, among non-participants, higher for those who have participated in the past.

## *2. Skepticism of Social Insurance Programs*

Knowing herders’ concerns, particularly among non-participants, would be helpful for better understanding why some herders are not enrolled. We presented possible concerns that the respondents may have and asked them to select any suitable choices (Questions 18, 20, and 21). Consequently, many respondents report concerns about expensive contributions as an obstacle: 63.0% of the participants think the contribution rate is too high. 54.8% of those insured in the past but who no longer participate said that they discontinued because the contribution rate was too high. Additionally, 47.6% of those who have never participated selected “contribution rate too high” as a reason.

In the open-ended comment box, one respondent who is a current participant noted: “The contribution rate is high for participating in the scheme voluntarily. I might not pay my contribution if the contribution rate is increased in the future.” This feeling is also shared among non-participants. In the case of formerly insured herders, seasonal income fluctuation and natural disasters (*dzud* and drought) may also have influenced their decisions to discontinue. For example, a herder commented: “My main reason for quitting

social insurance was the fixed payment method. Since we, herders, do not have a stable income across the seasons, the government should implement a flexible payment system for herders. For instance, I would like to pay my contribution after I sell cashmere in the spring and meat and animal skin in the fall.”

Another critical concern among the non-participants would be their doubt about receiving benefits in the future: 23.3% of the formerly insured herders and 24.1% of those who were never insured before do not believe there are any benefits. A former participant shared their opinion: “I participated in social insurance for many years. However, I did not receive any benefit from the insurance during my participation. I did not believe I could get benefits in the future.”

In addition, some identify the method of contributing as an obstacle (24.4% of those who were insured in the past and 19.0% of those who were never insured). Some respondents expressed opinions about income fluctuation and the inconvenience of payment. A respondent stated: “My family’s income is unstable across seasons. We only earn cash by selling vegetables and dairy products in the summer. Thus, we cannot participate in this program.” Another respondent said: “We herders face challenges to pay social insurance contribution because of income fluctuation. My income is mainly from cashmere in the spring and from meat in the fall.”

These findings imply that doubts about social insurance benefits and the inflexibility of the payment method led some herders to forgo their participation in social insurance. Thus, some findings reported in this subsection are consistent with hypotheses 1.2, 1.3, 1.4, and 1.5.

## **5. Conclusion**

Social insurance participation not only protects individuals from the risk of sudden income losses but also has implications at the macro level. Protecting particularly at-risk populations and those with a lower rate of social protection remains one of the priorities of governments worldwide. In the Mongolian context, social insurance coverage among the nomadic population (herders) is considerably lower than other voluntary and compulsory participants. Herders are informal economy workers who make a significant contribution to Mongolia's economy. Due to climate and environmental changes, they live and work in fluctuating conditions, and economic factors have directly impacted herders' incomes and livelihoods. Therefore, we conducted a survey of herders in nine provinces in Mongolia to explore the determinants of social insurance participation, including economic conditions, access to information, descriptive social norms, and political trust. This paper differs from previous studies in that it is the first, to our knowledge, to focus on the social insurance participation of nomadic herders of Mongolia. It contributes to the existing literature by uncovering the determinants affecting social insurance participation.

Our results show that economic conditions, especially the number of livestock – herders' primary source of income and assets – are positively and significantly associated with their social insurance participation. This finding is concerning because less wealthy herders would materially suffer without social insurance benefits such as old-age pensions, but they are the ones who have difficulty participating in social insurance. This situation may result in a greater percentage of herders living below the poverty line in the future. In order to improve social protection for a targeted population with low rates of social insurance participation, there is a need for specific policies such as a government subsidy

for social insurance contributions and long-term contracting so that herders can make payments despite income fluctuations.

We also find that descriptive social norms have a positive effect on social insurance participation among nomadic herders. Herders live together with a few relatives or neighboring families, isolating themselves far from provincial centers and moving from one pasture to another, leading to constant movement across the seasons. Since herder families mostly communicate with neighbors and relatives to exchange opinions and acquire information, it is reasonable that they (or the neighboring community) are more likely to join the program when their relatives and friends have already participated in social insurance.

Finally, education is positively associated with enrollment. It appears that educated herders, presumably because they have more information and understand social insurance needs, seek to protect themselves against various risks.

We conclude by discussing some limitations of this study. First, methodologically, social insurance workers who oversee the *soum* (district) level conducted the survey on the ground. This approach might have influenced herders' responses to some questions, including whether they report receiving information from social insurance workers or how much they trust the government. These figures may be overestimated due to desirability bias; item non-responses would be higher than otherwise, too.

Second, the study only focused on the perspective of individual herders. Further research should also focus on the government perspective (insurer), such as a separate analysis of the five types of insurance programs and the government's implementation of policies to encourage social insurance participation, particularly among herders. For example, one of the specific policies is that herders can retire five years before the official



retirement age: for female herders, age 50, and male herders at 55, which began on January 1, 2018. Hence, the impact of related policies on the social insurance participation of herders should be analyzed. Similarly, based on the findings of this study regarding descriptive social norms, future projects can focus on advocacy and the encouragement of herders to participate in social insurance by using the social norms.

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**Table 1. Social Insurance Contribution Rates in Mongolia As a Percentage of the Monthly Income of the Insured**

Type of insurance	Compulsory		Voluntary
	Employer	Employee	
Pension	9.5	9.5	12.5
Benefit	1.0	0.8	1.0
Employment injury and occupational diseases	0.8–2.8	-	1.0
Unemployment	0.2	0.2	-
Health	2.0	2.0	2.0
Total	13.5–15.5	12.5	16.5

Source: The Social Insurance Law, Article 15, the Parliament of Mongolia (1994).

Note: Employers pay varying contribution rates for workplace accident and occupational disease insurance based on sector-related requirements for labor safety and hygiene.



**Table 2: Summary Statistics**

	(1) All observations					(2) Non-participants			(3) Participants			Mean difference: (2) and (3)	p-value
	Obs	Mean	St.Dev	Min	Max	Obs	Mean	St.Dev	Obs	Mean	St.Dev		
Participation in social insurance	818	0.57	0.50	0	1								
Material conditions													
Number of livestock (continuous)	733	693.63	635.58	0	4620	323	569.70	504.04	410	791.26	708.01	-221.56	< 0.001
Seasonal income fluctuation (binary: 1 if yes)	813	0.25	0.44	0	1	349	0.19	0.39	464	0.30	0.46	-0.11	< 0.001
Monthly income (ordinal)	627	2.12	1.21	1	5	255	1.83	1.09	372	2.33	1.24	-0.50	< 0.001
Sources of information (binary: 1 if yes)													
Neighbors/friends/word of mouth	818	0.25	0.43	0	1	351	0.28	0.45	467	0.22	0.42	0.06	0.052
TV/radio	818	0.65	0.48	0	1	351	0.72	0.45	467	0.61	0.49	0.11	0.001
Bagh governor	818	0.22	0.41	0	1	351	0.23	0.42	467	0.21	0.41	0.02	0.586
SNS	818	0.31	0.46	0	1	351	0.26	0.44	467	0.34	0.48	-0.09	0.008
Website	818	0.06	0.23	0	1	351	0.03	0.17	467	0.08	0.27	-0.05	0.003
Insurance worker	818	0.71	0.45	0	1	351	0.64	0.48	467	0.77	0.42	-0.13	< 0.001
Newspaper	818	0.05	0.22	0	1	351	0.05	0.23	467	0.04	0.21	0.01	0.548
No information; not applicable	818	0.03	0.18	0	1	351	0.05	0.22	467	0.02	0.14	0.03	0.011
Relative's participation status (ordinal)	691	2.30	0.50	1.00	3.00	282	2.20	0.48	409	2.38	0.50	-0.18	< 0.001
Trust in government													
Trust in government in general (ordinal)	464	3.38	1.25	1	5	200	3.36	1.29	264	3.39	1.23	-0.04	0.740
Trust in social insurance authority (ordinal)	481	3.90	1.06	1	5	209	3.76	1.13	272	4.01	0.99	-0.25	0.009
Demographic characteristics													
Gender (binary: 1 if male)	802	0.56	0.50	0	1	341	0.62	0.49	461	0.51	0.50	0.10	0.003
Age group (ordinal)	804	6.06	1.94	1	12	347	6.08	2.04	457	6.05	1.87	0.03	0.830
Marital status (1 if married)	798	0.94	0.24	0	1	340	0.94	0.25	458	0.94	0.24	0.00	0.937
Education level (ordinal)	803	2.83	1.11	1	6	341	2.53	1.02	462	3.06	1.13	-0.53	< 0.001
Family size (ordinal)	813	2.53	0.90	1	6	347	2.54	0.97	466	2.53	0.84	0.01	0.872
Number of children (ordinal)	811	2.14	0.84	1	5	345	2.13	0.90	466	2.15	0.80	-0.02	0.796
Number of children in urban area (ordinal)	797	0.52	0.82	1	5	340	0.51	0.85	457	0.52	0.79	-0.01	0.888

Note: The number of observations varies across variables due to item non-responses. Those who selected “do not know” are not included in the summary statistics reported.

**Table 3: Determinants of Social Insurance Participation**

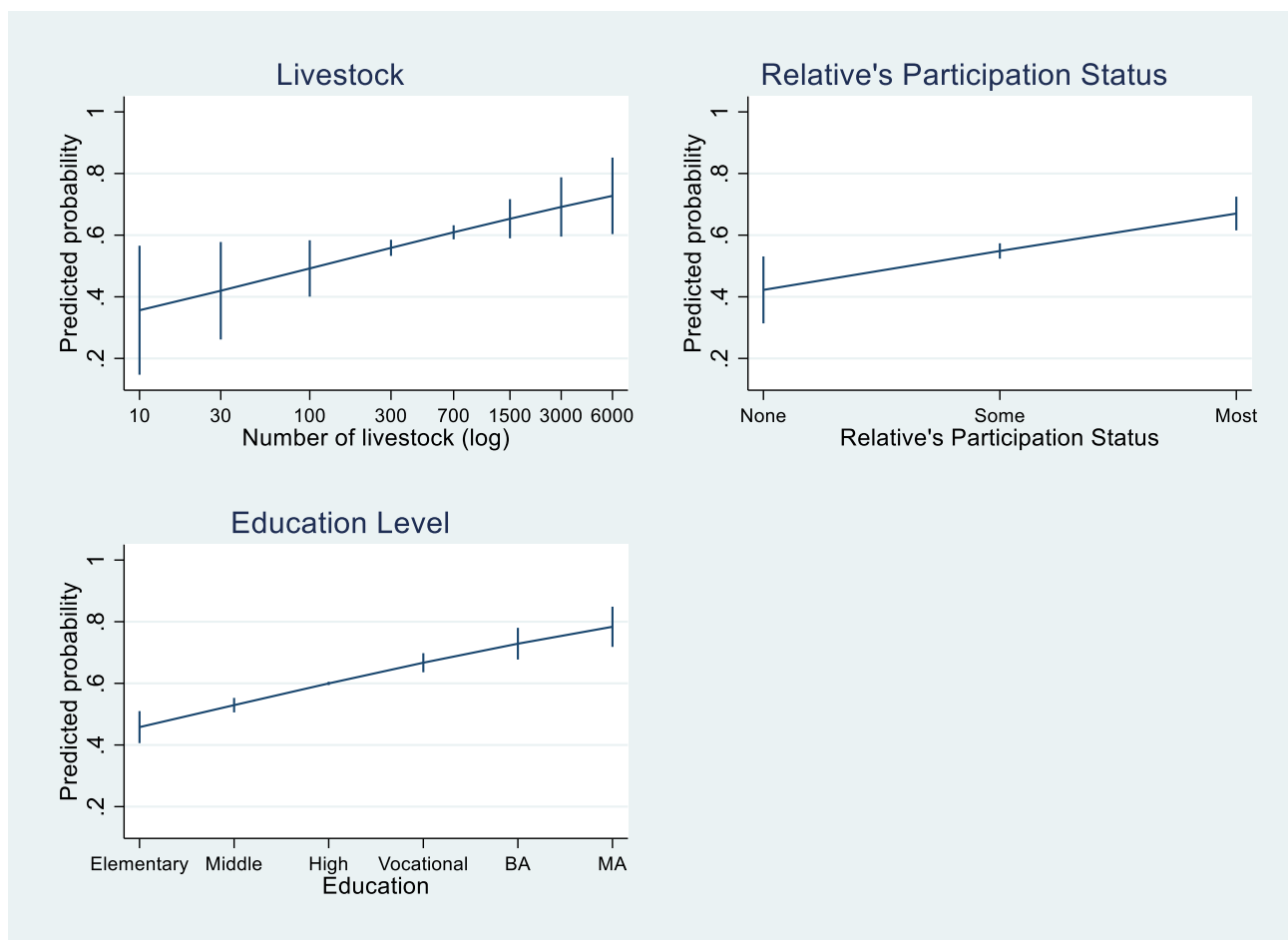
	Dependent variable: Participation in social insurance (binary - 1 if participant; 0 if not)				
	1	2	3	4	5
<b>Material conditions</b>					
Number of livestock (log)	0.315*** (0.090)	0.303*** (0.110)	0.303** (0.152)	0.224 (0.296)	0.223 (0.294)
Stable income (binary)	0.509** (0.211)	0.184 (0.242)	0.184 (0.181)	-0.117 (0.312)	-0.125 (0.339)
Monthly income (in tugrik)					
420,001-600,000		0.351 (0.270)	0.351 (0.371)	0.588 (0.589)	0.578 (0.578)
600,001-800,000		0.679** (0.332)	0.679 (0.418)	0.865** (0.428)	0.844** (0.429)
800,001-1,000,000		1.279** (0.498)	1.279* (0.665)	1.259 (0.781)	1.272* (0.765)
1,000,001+		0.154 (0.518)	0.154 (0.517)	0.167 (0.767)	0.259 (0.692)
Income not reported or “don’t know” selected		-0.265 (0.268)	-0.265 (0.227)	-0.498 (0.424)	-0.487 (0.398)
<b>Source of information</b>					
Neighbors/friends/word of mouth (binary)	-0.126 (0.200)	-0.149 (0.224)	-0.149 (0.229)	-0.24 (0.313)	-0.19 (0.288)
TV/radio (binary)	-0.587*** (0.195)	-0.617*** (0.216)	-0.617** (0.286)	-0.829*** (0.308)	-0.910*** (0.312)
Bagh governor (binary)	0.0426 (0.209)	0.0992 (0.230)	0.0992 (0.211)	0.144 (0.275)	0.215 (0.267)
SNS (binary)	0.506*** (0.196)	0.476** (0.221)	0.476* (0.244)	0.669* (0.400)	0.755** (0.356)
Website (binary)	1.399*** (0.511)	1.234** (0.538)	1.234* (0.737)	2.102* (1.217)	1.488** (0.737)
Insurance worker (binary)	0.427** (0.207)	0.484** (0.236)	0.484** (0.242)	0.620* (0.319)	0.584* (0.327)
Newspaper (binary)	-0.471 (0.375)	-0.565 (0.433)	-0.565 (0.495)	-0.472 (0.550)	-0.579 (0.573)
No information; not applicable	-0.169 (0.574)	-0.181 (0.646)	-0.181 (0.643)	0.0213 (0.623)	0.0439 (0.695)
<b>Social norms</b>					
Relatives’ participation status	0.609*** (0.181)	0.627*** (0.200)	0.627*** (0.213)	0.413 (0.298)	0.282 (0.354)
<b>Political trust</b>					
Trust in government in general				-0.0406 (0.154)	
Trust in social insurance authority					0.177 (0.152)

**Table 3: Determinants of Social Insurance Participation (continued)**

Control variables				
Male (binary)	-0.471**	-0.471*	-0.577*	-0.577*
	(0.202)	(0.244)	(0.324)	(0.327)
Age (continuous)	-0.034	-0.034	-0.0854	-0.0859
	(0.060)	(0.064)	(0.080)	(0.087)
Married (binary)	-0.624	-0.624	0.0698	0.00296
	(0.451)	(0.413)	(0.632)	(0.624)
Educational attainment (ordinal)	0.346***	0.346***	0.382***	0.410***
	(0.097)	(0.068)	(0.112)	(0.105)
Family size (ordinal)	0.0487	0.0487	0.123	0.142
	(0.133)	(0.133)	(0.179)	(0.182)
Number of children (continuous)	0.215	0.215**	0.139	0.0977
	(0.151)	(0.109)	(0.140)	(0.158)
Students in urban areas (binary)	0.00539	0.00539	0.0369	0.0576
	(0.131)	(0.083)	(0.111)	(0.114)
Dummy variables for provinces				
Umnugobi	1.461***	1.461***	1.941***	1.868***
	(0.441)	(0.119)	(0.125)	(0.114)
Dundgobi	0.070	0.070	0.480**	0.273
	(0.396)	(0.125)	(0.213)	(0.229)
Uvurkhangai	0.988**	0.988***	1.118***	1.094***
	(0.429)	(0.123)	(0.240)	(0.267)
Khuvsgul	0.287	0.287**	0.471**	0.468**
	(0.412)	(0.135)	(0.211)	(0.206)
Uvs	0.284	0.284***	0.028	(0.011)
	(0.385)	(0.088)	(0.122)	(0.147)
Bayan-Ulgii	0.438	0.438*	0.498	0.404
	(0.450)	(0.259)	(0.475)	(0.437)
Khentii	0.058	0.058	0.584***	0.536***
	(0.397)	(0.096)	(0.149)	(0.157)
Dornod	0.570	0.570***	1.193***	1.125***
	(0.401)	(0.116)	(0.215)	(0.246)
Constant	-3.202***	-4.181***	-4.181***	-3.726**
	(0.743)	(1.106)	(1.410)	(1.788)
Dummy variables for provinces	No	Yes	Yes	Yes
Standard errors	Robust SE	Robust SE	Clustered by province	Clustered by province

Note: Model 1 reports the baseline model without control variables; Model 2 adds the demographic characteristics of the respondents and dummy variables for provinces in which the respondents live. Standard errors are used for these two models. Model 3 uses standard errors clustered by provinces. Model 4 adds to Model 3 the respondents' trust in government in general; Model 5 adds to Model 3 their trust in the social insurance authority. The number of observations varies due to item non-responses. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$ .

**Figure 1: Change in the Predicted Probability of Participation**



Note: The figures report the predicted probabilities of respondents' participation in social insurance when the key independent variable takes different values, based on Model 3 in Table 3. The *margins* command in Stata is used. For each observation in the dataset, we calculate the predicted probability when the key independent variable takes the specified values; the other variables take the values as observed in the dataset. Vertical spikes indicate 95% confidence intervals.

## **Appendix A: Questionnaire**

### **Front Page**

Dear Participants,

You are invited to participate in a survey about “Social Insurance Participation.” The study is being conducted by the General Authority for Social Insurance (GASI) and International University of Japan.

You are randomly selected from your province. The purpose of this study is to examine factors affecting enrollment of the social insurance that serve the needs of citizens. We estimate that it will take about 15-20 minutes of your time to complete the questionnaire.

Your participation in this survey is completely voluntary. If you choose to participate in this survey, your answers are completely confidential, and the results will be used for academic purposes. The questions in this survey do not ask you to reveal any personally identifying information. If you wish to withdraw from the study or have any questions, contact the investigators listed below.

Thank you for your assistance in this study.

*Contact information:*

*Phone number:*

*Email:*

Sincerely yours,

Survey team:

Names and titles of the researchers

### Part I: General Information

1. From what sources do you usually get **information on current issues**? Please check boxes and you can select multiple options.

Government office	Bagh governor	Neighbors/ friends/ word of mouth	TV/ radio	Social media	Website	News-paper	Do not know/ Do not get any information
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (if you have other channels, please write down.)

2. From what sources do you usually get **information on social insurance**? Please check boxes and you can select multiple options.

Neighbors/ friends/ word of mouth	TV/ radio	Bagh governor	Social media (facebook)	Website	Social insurance worker	News-paper	Do not know/ Do not get any information
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (if you have other channels, please write down.)

3. Please indicate how strongly you agree or disagree that you need social insurance? (Social insurance includes pension, health insurance, and benefits) Please select one answer choice and circle the number.

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Do not know
5	4	3	2	1	0

4. Why do you think you need social insurance? Please check boxes. You can select multiple options.

Protect against sudden risks	Receive old age pension after retirement	Protect my family	Protect my health	Get a loan from the bank	Work abroad/ apply visa	I do not know well
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (if you have other reasons, please write down.)

5. Did you work in herding for the householder or did you work as hired herder (for another herder or a cooperative)? Please select one answer choice and check the box.

For household	As hired herder	Other
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Does your family only earn from livestock/herding? *Please select one answer choice and circle the number.*

Yes	No	Do not want to answer
2	1	0

7. If you answered “No” to question [6], what is your other source of income? *Please check boxes. You can select multiple options.*

Formal employee	Parents’ support	Small business owned	Other source
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Do you have a stable monthly income?

Yes	No
2	1

9. Please select your household monthly average income interval (tugriks)? *Please select one answer choice and check the box.*

Up to 420,000	420,001-600,000	600,001-800,000	800,001-1,000,000	1,000,001 above	Do not want to answer
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. If you do not have a stable monthly income, please select your household annual income interval? *Please select one answer choice and check the box.*

Up to 4,000,000	4,000,001-6,000,000	6,000,001-9,000,000	9,000,001-12,000,000	12,000,001 above	No income	Do not want to answer
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. How many livestock does your family have? *Please write down.*

- a. Goat [                    ]
- b. Sheep [                    ]
- c. Cattle [                    ]
- d. Horse [                    ]
- e. Camel [                    ]

12. Do you have hired assistant herders? *Please select one answer choice and circle the number.*

Yes	No
2	1

13. If answered “Yes” to question [12], do you pay their social insurance contribution? *Please select one answer choice and circle the number.*

Yes	No	Do not want to answer
2	1	0

**Part II: Social insurance participation**

14. Are you currently enrolled in the social insurance? *Please select one answer choice and circle the number.*

Yes	No	Do not remember
2	1	0

*If you chose "Yes" please proceed to Question [15].*

*If you chose these answers, please proceed to Question [19].*

15. How long have you been participating in social insurance? *Please select one answer choice and circle the number.*

within 1 year	within 1-3 years	within 3-5 years	within 5-7 years	within 7-9 years	within 9-11 years	within 11-13 years	within 13-15 years	above 15
1	2	3	4	5	6	7	8	9

16. How often do you visit the social insurance office? *Please select one answer choice and circle the number.*

Annually	Quarterly	Monthly	Weekly	If necessary	Do not know
1	2	3	4	5	0

17. What is your purpose to visit the social insurance office? *Please check boxes. You can select multiple options.*

Conclude/ extend my contract	Get related information	Pay insurance contribution, fill out social insurance book	Get reference (for bank loan, embassy, etc)	Get social insurance services (pension, benefits, etc)	Other
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (if you have other reasons, please write down.)

--



18. Do you have any concerns about participating in social insurance? *Please check boxes. You can select multiple options.*

Payment method is not flexible – only cash is accepted	Contribution rate is high	Even though I participate in social insurance, I do not get good enough benefits	I am not sure whether I need social insurance	Social insurance system unfair	I do not believe I will live long and get old age pension.	Distance of social insurance office is too far.	I do not know well.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other reason (if you have other reasons, please write down.)



*After answering Question [18], please proceed to Question [22].*



*Please answer these questions if you have not enrolled in the social insurance.*

19. This question is for those who are currently not enrolled. Have you ever participated in the social insurance in the past? *Please select one answer choice and circle the number.*

Yes (enrolled in the past, but not now)	No (never enrolled in the past)	Do not remember
2	1	0

20. If answered “Yes” to question [19] (enrolled in the past but not now), why did you stop enrolling in social insurance? *Please check boxes. You can select multiple options.*

- Payment methods were not convenient.
- Contribution rate (amount of money you have to pay every month) was high.
- I could not receive good benefit from social insurance (such as pension and health insurance).
- I was not sure whether I need social insurance.
- I did not trust social insurance.
- Distance of social insurance office was far.
- I did not have enough money to pay for contribution.
- Natural disaster such as heavy snow and drought.
- I do not know well.
- Other reason (if you have other reasons, please write down.)

21. If answered “No” to question [19] (never enrolled in the past), which of the following statements describes your reasons for not participating in the social insurance? *Please check boxes. You can select multiple options.*

- Payment methods are not convenient.
- Contribution rate (amount of money you have to pay every month) is high.
- I do not think I can receive good benefit from social insurance (such as pension and health insurance)
- I am not sure whether I need social insurance
- I do not trust social insurance
- Distance of social insurance office is far
- I do not have enough money to pay for contribution.
- I prefer to save my money in a bank instead of participating in social insurance.
- I have never heard about this insurance/ I don’t have enough information about social insurance
- I believe the government will give opportunities if we do not participate in social insurance (Ex: contribution exemption, reduction, and other policies)
- I do not know well.
- Other reason (if you have other reasons, please write down.)

22. How much do you trust the following actors/institutions?

	Trust	Somewhat trust	Neither trust nor distrust	Somewhat distrust	Distrust	Do not know
Government in general	5	4	3	2	1	0
Social insurance authority	5	4	3	2	1	0
Local government	5	4	3	2	1	0
Banks	5	4	3	2	1	0
Religion	5	4	3	2	1	0
Neighbors	5	4	3	2	1	0

23. How much do you support the performance of the current government?

Strongly support	Moderately support	Slightly support	Not support at all	Do not know
4	3	2	1	0

### Part III. Intention to participate in the future

24. Now we would like to give you some information about other people’s participation.

[The respondents are randomly assigned to the following four groups.]

**Group 1:** As of 2019, overwhelming majority of the Mongolian people – 78% of the working age population – participate in the social insurance. Also, almost 45,000 herders already participate in the program in 2019.

**Group 2:** As of 2019, overwhelming majority of the Mongolian people – 78% of the working age population – participate in the social insurance. Also, almost 40,000 herders already participate in the program in 2019. Herders who participate in social insurance can receive social insurance services including pensions, benefits, and healthcare. For instance, male herders will retire at the age of 55 and

female herders will retire at the age 50. After retirement, they can receive pension.

**Group 3:** As of 2019, many Mongolian people do not participate in social insurance. Less than 45,000 herders participate in the program, and this is less than one in five herders.

**Group 4:** As of 2019, many Mongolian people do not participate in social insurance. Less than 45,000 herders participate in the program, and this is only 18% of the herders. Herders who participate in social insurance can receive social insurance services including pensions, benefits, and healthcare. For instance, male herders will retire at the age 55 and female herders will retire at the age 50. After retirement, they can receive pension.

Are you now participating in social insurance?

<b>Yes. I am</b>	<b>No. I'm not</b>
↓	↓

Would you like to continue to participate in the social insurance program?  
Please select one answer choice and circle the number.

Definitely yes	Probably yes	Not sure	Probably not	Definitely not	I do not know well
5	4	3	2	1	0

Would you like to participate in the social insurance program in the future?  
Please select one answer choice and circle the number.

Definitely yes	Probably yes	Not sure	Probably not	Definitely not	I do not know well
5	4	3	2	1	0

25. Do your relatives, siblings, and/or neighbors participate in the social insurance? Please select one answer choice and circle the number.

Most of them	Some of them	None of them	I do not know well
3	2	1	0

26. Imagine most of your relatives, siblings, and neighbors participate in social insurance. Also, imagine you are the only one among family/neighbors who have not participated. Are you willing to participate in social insurance in the near future? Please select one answer choice and circle the number.

Yes	Maybe	No	I do not know well
3	2	1	0

**Part IV: Demographic information**

27. Please specify the aimag (province) where you live?

Tuv	Umnugobi	Dungobi	Uvurkhangai	Khuvsgul	Uvs	Bayan-Ulgii	Khentii	Dornod
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

28. Please write your soum and bagh's name?

--

29. Please select your gender?

Male	Female	Do not want to answer
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30. Which category below include your age?

- <19       20-24       25-29       30-34       35-39  
 40-44  
 45-49       50-54     55-59       60-64       65-69       70+

31. What is your marital status?

Married	Not married	Other
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

32. What is your education level?

Grade (example: 1st grade, 3rd grade, etc.)

Elementary school	Middle school	High school	Vocational	Bachelor degree	Master and above degree	Do not want to answer this question
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

33. Please select your number of family members (including yourself)?

1-2	3-4	5-6	6-7	8-9	10<
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

34. How many children do you have? Please select your children's number below.

1	2-3	4-5	Above 5	Do not have a child
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

35. [If you have children] How many of your children are students in urban area?

1	2	3	4	5	None
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If there is anything that we did not ask but you want to say (regarding social insurance or any other matter), please feel free to write it down here.

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This is the end of the survey. Thank you very much for participating in the survey!

## Appendix B: Additional Analyses

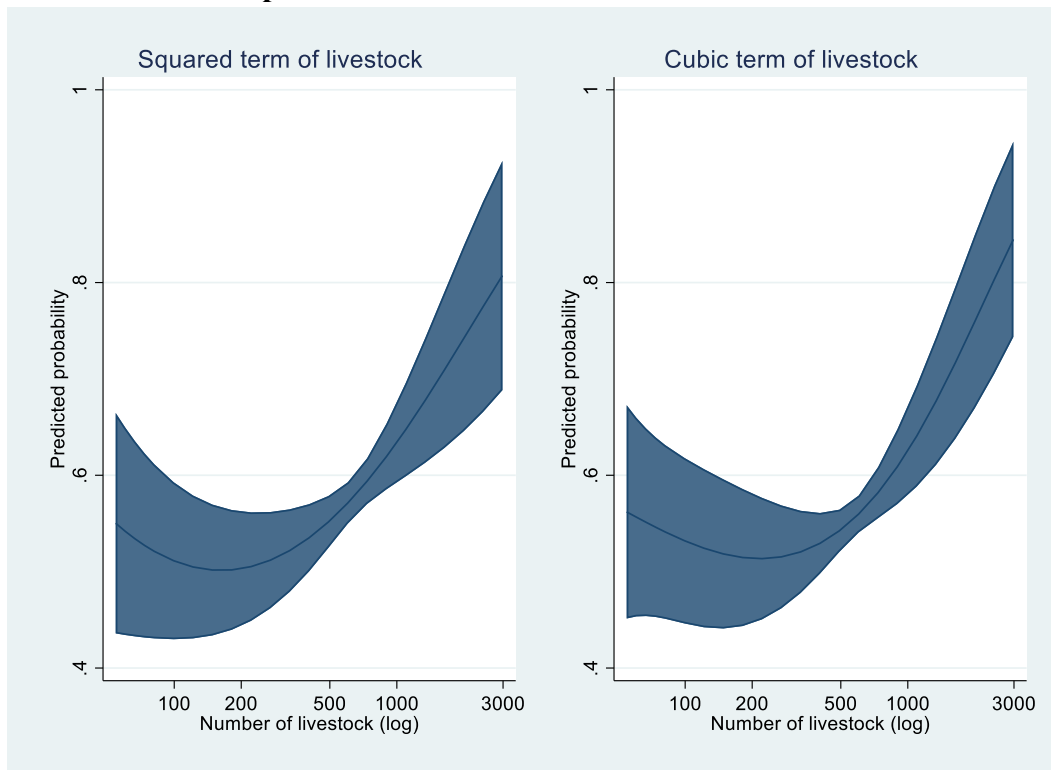
### B1: Regression Table

	Dependent variable: participation in the social insurance (binary - 1 if participant; 0 if not)			
	1	2	3	4
<b>Material conditions</b>				
Number of livestock (log)	0.377** (0.167)	-2.078** (0.917)	1.514 (4.216)	0.21 (0.521)
Number of livestock (log) <sup>2</sup>		0.204** (0.083)	-0.463 (0.715)	
Number of livestock (log) <sup>3</sup>			0.040 (0.040)	
Stable income (binary)	0.335** (0.135)	0.259 (0.195)	0.26 (0.192)	2.372 (1.627)
Monthly income (in tugrik)				
420,001-600,000		0.363 (0.375)	0.376 (0.371)	0.375 (0.354)
600,001-800,000		0.674* (0.404)	0.661* (0.398)	0.687 (0.430)
800,001-1,000,000		1.189* (0.634)	1.203* (0.639)	1.357** (0.667)
1,000,001+		0.168 (0.522)	0.172 (0.518)	0.136 (0.452)
Income not reported or “don’t know” selected		-0.317 (0.216)	-0.298 (0.212)	-0.256 (0.231)
Monthly income (ordinal)	0.232** (0.098)			
<b>Source of information</b>				
Neighbors/friends/word of mouth (binary)	-0.275 (0.194)	-0.132 (0.229)	-0.129 (0.229)	-0.141 (0.223)
TV/radio (binary)	-0.512* (0.274)	-0.614** (0.284)	-0.620** (0.283)	-0.610** (0.287)
Bagh governor (binary)	0.0233 (0.210)	0.128 (0.196)	0.141 (0.191)	0.128 (0.215)
SNS (binary)	0.272 (0.303)	0.462* (0.248)	0.455* (0.249)	0.477** (0.237)
Website (binary)	1.127 (0.693)	1.113 (0.738)	1.116 (0.732)	1.350* (0.755)
Insurance worker (binary)	0.557** (0.264)	0.503** (0.247)	0.491** (0.245)	0.506** (0.248)
Newspaper (binary)	-0.454 (0.743)	-0.563 (0.485)	-0.589 (0.481)	-0.603 (0.444)
Do not know; do not get any information	0.0221 (0.967)	-0.309 (0.605)	-0.27 (0.606)	-0.0776 (0.620)
<b>Social norms</b>				
Relatives’ participation status	0.574** (0.223)	0.625*** (0.211)	0.633*** (0.202)	0.718 (1.230)

Control variables				
Male (binary)	-0.379 (0.258)	-0.476** (0.238)	-0.480** (0.238)	-0.481** (0.244)
Age (continuous)	-0.0699 (0.091)	-0.0373 (0.064)	-0.0407 (0.065)	-0.0386 (0.059)
Married (binary)	-0.743 (0.500)	-0.627 (0.410)	-0.611 (0.414)	-0.605 (0.421)
Education level (ordinal)	0.357*** (0.101)	0.343*** (0.075)	0.347*** (0.076)	-0.0634 (0.804)
Family size (ordinal)	0.124 (0.161)	0.0586 (0.132)	0.0628 (0.137)	0.0371 (0.131)
Number of children (continuous)	0.0708 (0.136)	0.211* (0.119)	0.208* (0.118)	0.222** (0.092)
Students in urban areas (binary)	0.0756 (0.130)	-0.00424 (0.078)	-0.00044 (0.077)	0.00469 (0.090)
Interactions				
Number of livestock × seasonal income fluctuation				-0.363 (0.260)
Number of livestock × relative's participation status				-0.014 (0.200)
Number of livestock × education level				0.067 (0.132)
Constant	-4.359*** (1.595)	2.558 (2.549)	-3.652 (8.055)	-3.658 (3.469)
Observations	445	582	582	582
Pseudo R-squared	0.161	0.173	0.174	0.168
Dummy variables for provinces	Yes	Yes	Yes	Yes

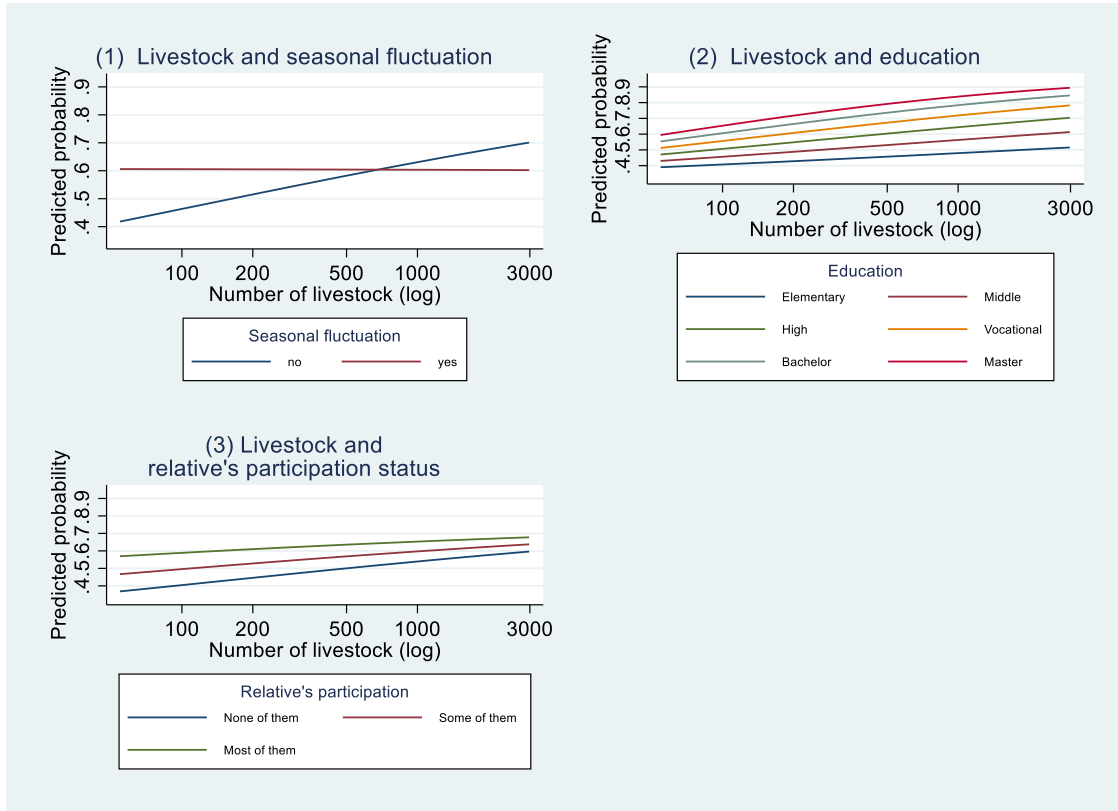
Note: The table reports the results of logit regressions that build upon the ones in Table 3. In Model 1, instead of using binary variables equal to income categories, we treat the monthly income variable as an ordinal variable. In Models 2 and 3, we check the possibility of non-linear relationship between the number of livestock and the dependent variable by inserting the squared and cubic terms. In Model 4, we examine interaction effects between the number of livestock and some variables.

## B2: Number of Livestock and Participation in Social Insurance – Checking Non-Linear Relationship



Note: The figure reports the predicted probability of the respondent's participating in social insurance as the value of the key independent variable (number of livestock) changes. The left-side figure is based on Model 2 in Appendix B1 (with squared term) and the right-side figure is based on Model 3 in Appendix B1 (with squared and cubic terms).

**B3: Interaction Terms: Livestock and Seasonal Income Fluctuation, Relative's Participation Status, and Education Level**



Note: The figure reports the predicted probability of the respondent's participating in social insurance as the value of the key independent variables based on Model 4 in Appendix Table B1. It examines the relationship between the number of livestock and the chance of participation across different levels of (1) seasonal income fluctuation; (2) education level; and (3) relative's participation status.



## Appendix C: Marginal Effects

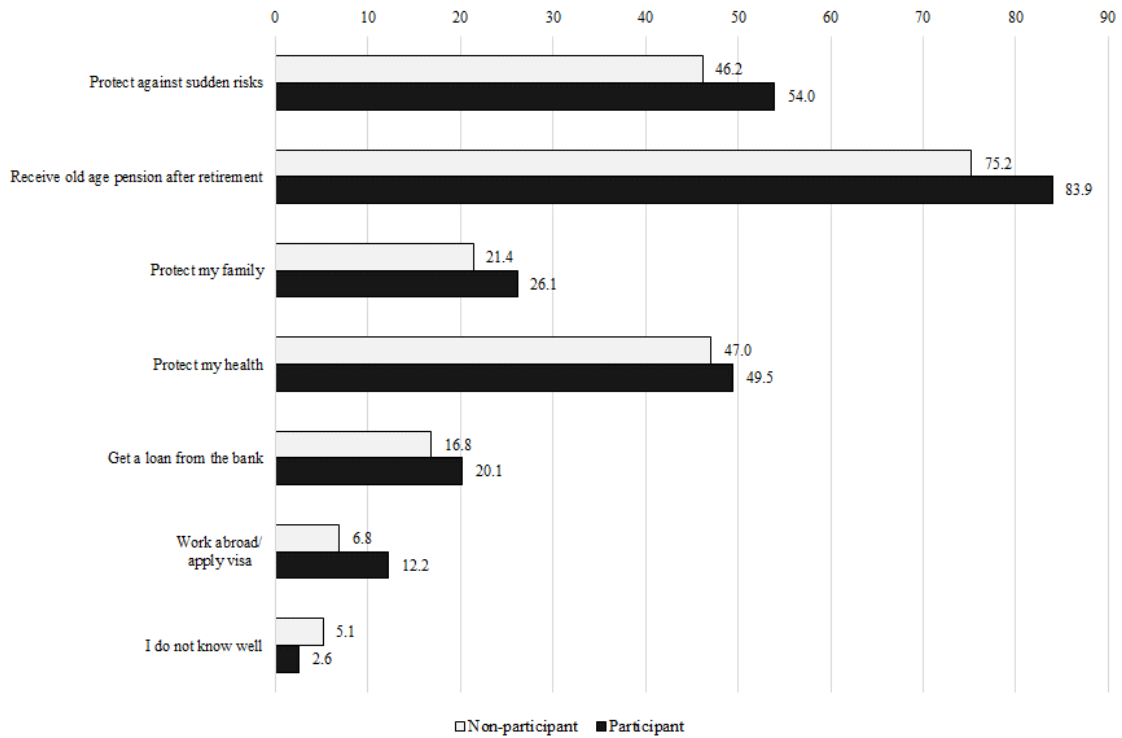
	Dependent variable: participation in the social insurance (binary - 1 if participant; 0 if not)				
	1	2	3	4	5
<b>Material conditions</b>					
Number of livestock (log)	0.0680*** (0.019)	0.0584*** (0.021)	0.0584** (0.028)	0.0404 (0.052)	0.036 (0.054)
Stable income (binary)	0.110** (0.045)	0.0356 (0.047)	0.0356 (0.035)	-0.0212 (0.057)	-0.0135 (0.060)
Monthly income (in tugrik)					
420,001-600,000		0.0699 (0.054)	0.0699 (0.073)	0.11 (0.109)	0.135 (0.117)
600,001-800,000		0.131** (0.062)	0.131* (0.074)	0.158** (0.076)	0.173** (0.071)
800,001-1,000,000		0.230*** (0.083)	0.230** (0.104)	0.221* (0.125)	0.285** (0.117)
1,000,001+		0.0309 (0.097)	0.0309 (0.103)	0.0318 (0.146)	0.041 (0.144)
Income not reported or “don’t know” selected		-0.054 (0.055)	-0.054 (0.046)	-0.095 (0.079)	-0.0745 (0.085)
<b>Source of information</b>					
Neighbors/friends/word of mouth (binary)	-0.0272 (0.044)	-0.0287 (0.043)	-0.0287 (0.045)	-0.0433 (0.057)	-0.0346 (0.058)
TV/radio (binary)	-0.127*** (0.042)	-0.119*** (0.041)	-0.119** (0.055)	-0.150*** (0.052)	-0.153*** (0.053)
Bagh governor (binary)	0.00921 (0.046)	0.0191 (0.044)	0.0191 (0.041)	0.0259 (0.049)	0.0195 (0.050)
SNS (binary)	0.109*** (0.042)	0.0918** (0.043)	0.0918** (0.047)	0.121* (0.073)	0.0957 (0.071)
Website (binary)	0.302*** (0.112)	0.238** (0.093)	0.238 (0.147)	0.38 (0.234)	0.378 (0.253)
Insurance worker (binary)	0.0923** (0.044)	0.0933** (0.045)	0.0933** (0.046)	0.112** (0.057)	0.126** (0.059)
Newspaper (binary)	-0.102 (0.083)	-0.109 (0.082)	-0.109 (0.094)	-0.0853 (0.099)	-0.0991 (0.090)
Do not know; do not get any information	-0.0365 (0.117)	-0.035 (0.125)	-0.035 (0.124)	0.00385 (0.112)	0.0173 (0.101)
<b>Social norms</b>					
Relatives’ participation status	0.131*** (0.038)	0.121*** (0.038)	0.121*** (0.040)	0.0746 (0.053)	0.0775 (0.049)
<b>Political trust</b>					
Trust in government in general				-0.00734 (0.028)	-0.00219 (0.034)
Trust in social insurance authority					-0.00642 (0.049)

Control variables					
Male (binary)		-0.0909**	-0.0909**	-0.104*	-0.0994
		(0.039)	(0.045)	(0.056)	(0.060)
Age (continuous)		-0.00657	-0.00657	-0.0154	-0.0159
		(0.012)	(0.012)	(0.014)	(0.014)
Married (binary)		-0.12	-0.12	0.0126	0.0495
		(0.085)	(0.078)	(0.114)	(0.130)
Educational attainment (ordinal)		0.0669***	0.0669***	0.0689***	0.0747***
		(0.019)	(0.013)	(0.019)	(0.022)
Family size (ordinal)		0.0094	0.0094	0.0222	0.0332
		(0.026)	(0.026)	(0.033)	(0.038)
Number of children (continuous)		0.0414	0.0414**	0.0252	0.0259
		(0.030)	(0.020)	(0.025)	(0.028)
Students in urban areas (binary)		0.00104	0.00104	0.00667	0.00581
		(0.026)	(0.016)	(0.020)	(0.022)
Dummy variables for provinces					
Umnugobi		0.268***	0.268***	0.341***	0.339***
		(0.077)	(0.020)	(0.024)	(0.023)
Dundgobi		0.014	0.014	0.0915**	0.127***
		(0.084)	(0.025)	(0.038)	(0.035)
Uvurkhangai		0.191**	0.191***	0.210***	0.174***
		(0.085)	(0.021)	(0.035)	(0.035)
Khuvsgul		0.058	0.0576**	0.0898**	0.105***
		(0.085)	(0.027)	(0.039)	(0.036)
Uvs		0.057	0.0571***	0.005	0.002
		(0.083)	(0.017)	(0.023)	(0.032)
Bayan-Ulgii		0.088	0.0876*	0.095	0.088
		(0.088)	(0.049)	(0.087)	(0.093)
Khentii		0.012	0.012	0.111***	0.159***
		(0.083)	(0.020)	(0.029)	(0.037)
Dornod		0.113	0.113***	0.223***	0.235***
		(0.078)	(0.021)	(0.037)	(0.039)
Observations		614	582	582	339
Dummy variables for provinces		No	Yes	Yes	Yes
Standard errors		Robust SE	Robust SE	Clustered SE by province	Clustered SE by province

Note: The table reports marginal effects: a change in the predicted probability of the respondent's participating in the social insurance when the value of the independent variable changes by one unit.

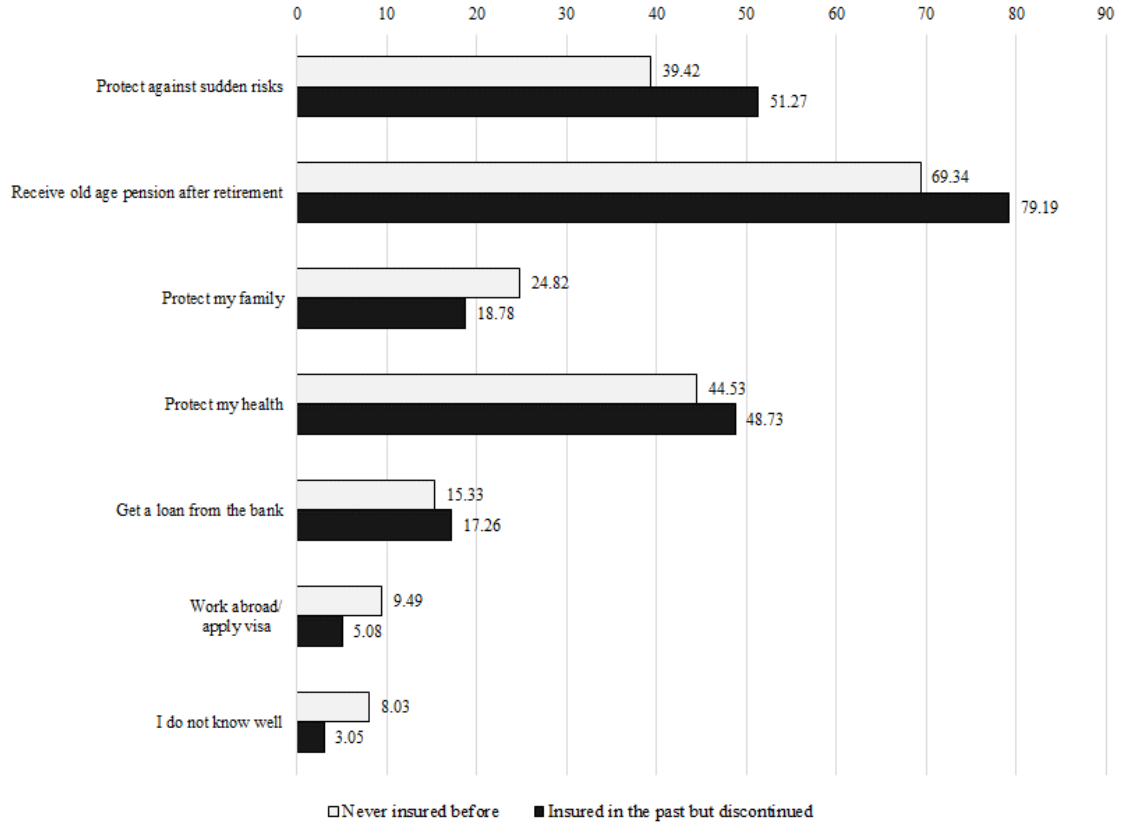
## Appendix D: Perceived Benefits, Concerns about Social Insurance, and Reasons of Non-Participation

### D1: Perceived Benefits of Social Insurance: Participants and Non-Participants



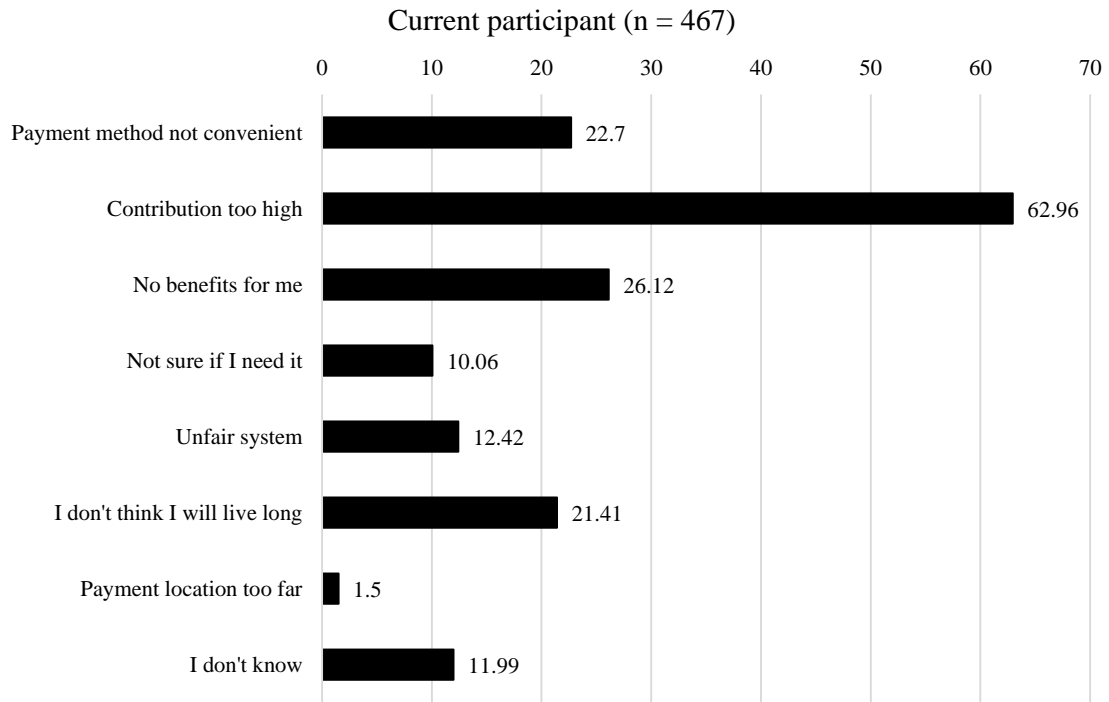
Note: The figure reports the percentage of the respondents who selected each answer choice. It summarizes the responses by those respondents are currently enrolled in the social insurance (n=467) and those who are not (n=334). The question in the survey is: “Why do you think you need social insurance?” Respondents were allowed to select as many answer choices as they like.

**D2: Perceived Benefits of Social Insurance: Those Who Participated Before but Discontinued and Those Who Never Participated Before**



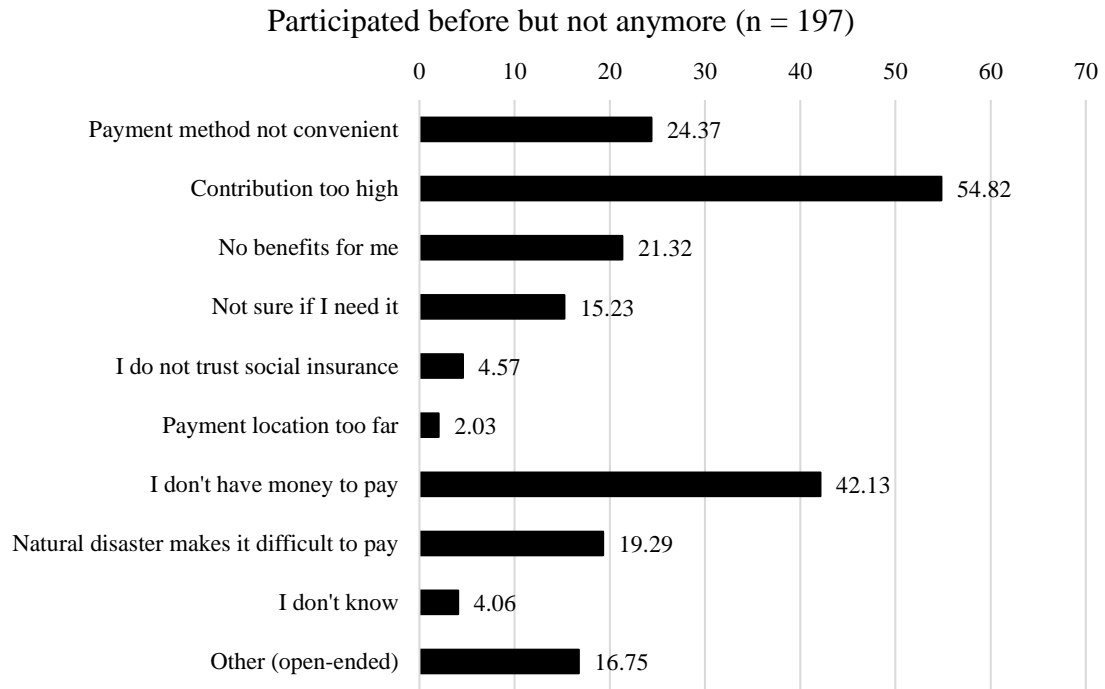
Note: The figure reports the percentage of the respondents who selected each answer choice. It summarizes the responses by those respondents who have never enrolled in the social insurance in the past (n=137) and those respondents who were enrolled in the social insurance in the past but not anymore (n=197). The question in the survey is: “Why do you think you need social insurance?” Respondents were allowed to select as many answer choices as they like.

### D3: Concerns about Social Insurance: Participants



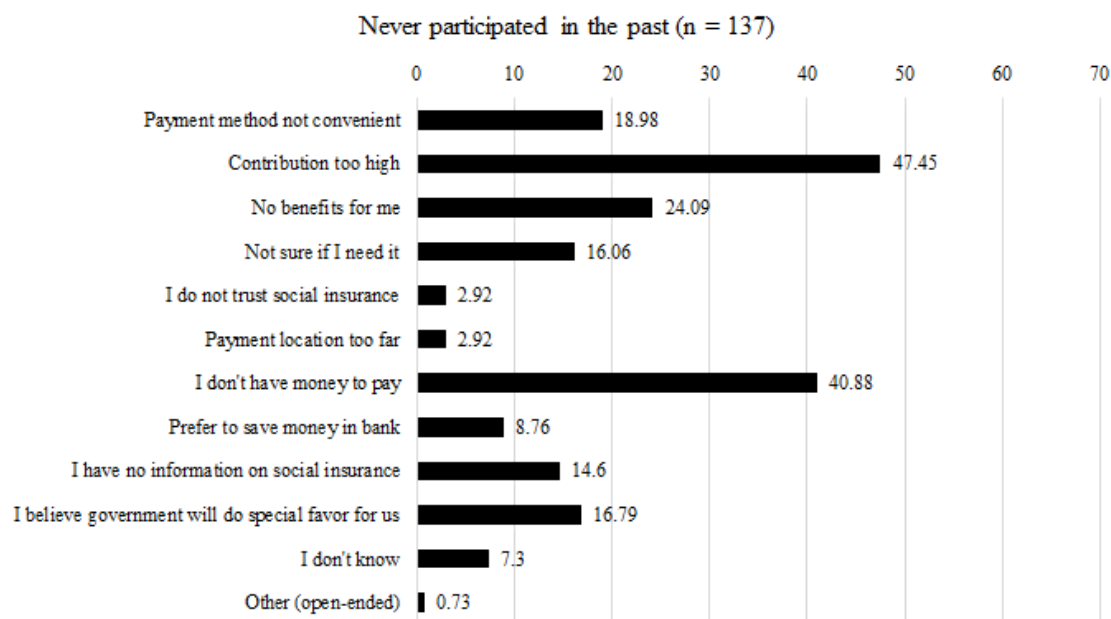
Note: The figure reports the percentage of the respondents who selected each answer choice. It summarizes the responses by those respondents who are currently enrolled in the social insurance. The question in the survey is: “Do you have any concerns about participating in social insurance?” Respondents were allowed to select as many answer choices as they like.

#### D4: Reasons of Discontinuing Participation



Note: The figure reports the percentage of the respondents who selected each answer choice. It summarizes the responses by those respondents who were enrolled in the social insurance in the past but not anymore. The question in the survey is: “Why did you stop enrolling in social insurance?” Respondents were allowed to select as many answer choices as they like.

## D5: Reasons of Non-Participation



Note: The figure reports the percentage of the respondents who selected each answer choice. It summarizes the responses by those respondents who have never enrolled in the social insurance in the past. “Which of the following statements describes your reasons for not participating in the social insurance?” Respondents were allowed to select as many answer choices as they like.