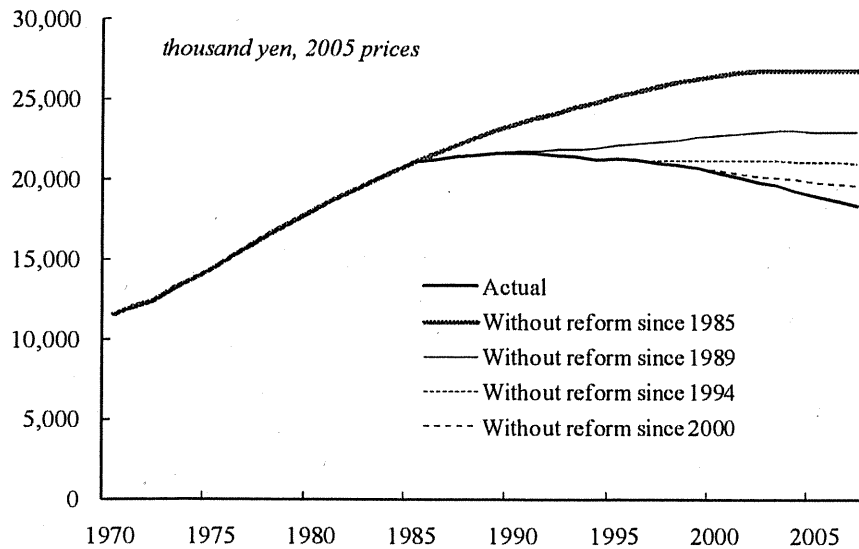
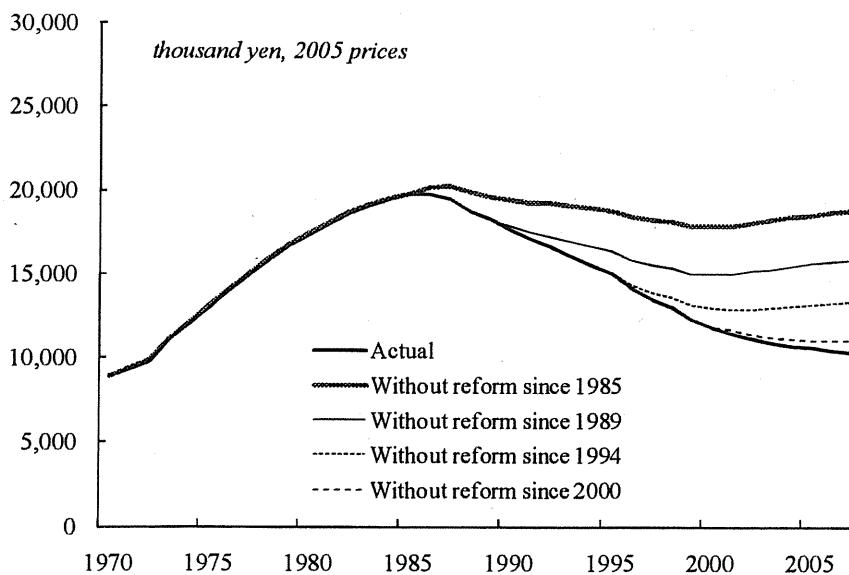


Figure 3. The impact of social security reforms on social security wealth (SSW)

Males (average for ages 55-69)

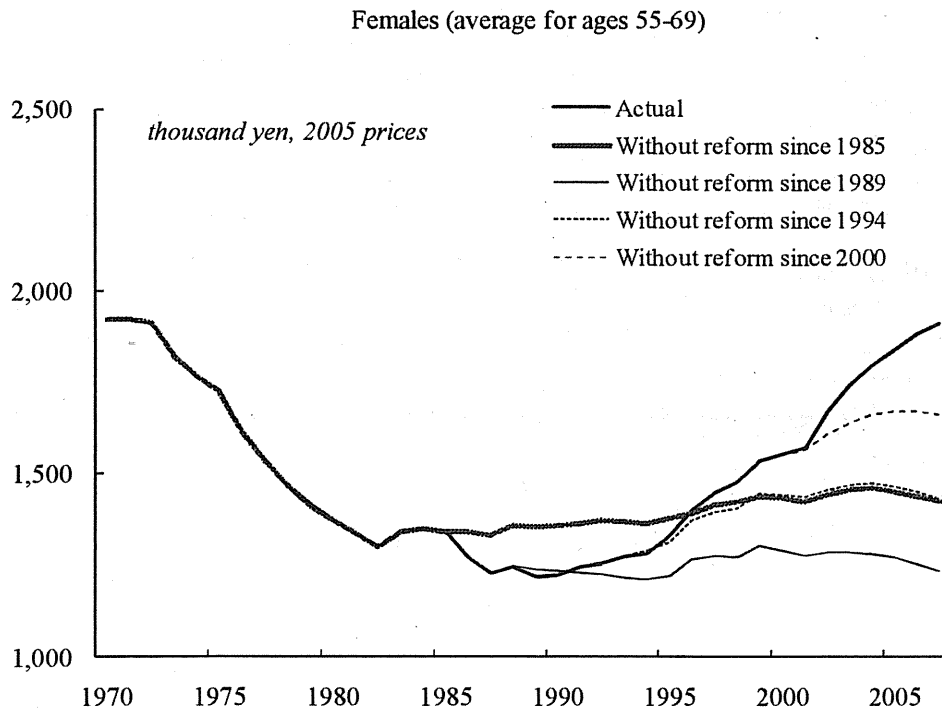
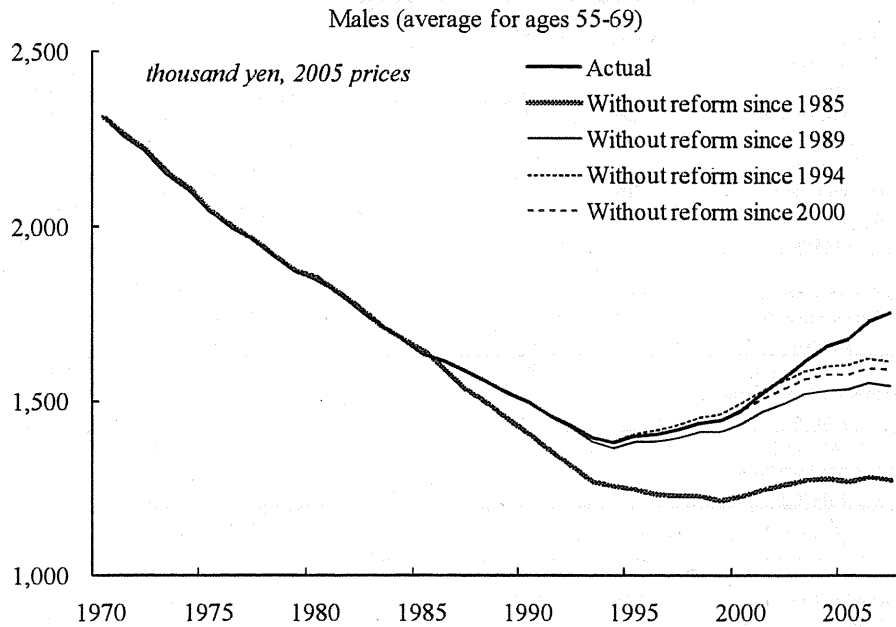


Females (average for age 55-69)



(Note) "Without reform since 2004" curve is omitted because of its negligible impact.

Figure 4. The impact of social security reforms on the option value (OV)



(Note) "Without reform since 2004" curve is omitted because of its negligible impact.

Table 4. Estimated impact of social security reforms on elderly labor force

		(annual average for 1985-2007, in thousands)						
		Actual	Baseline	Without reform since:				
Based on OV				1985	1989	1994	2000	2004
Males								
Model 1	Labor force per year	7,093	7,087	6,996	7,060	7,074	7,067	7,085
	Difference from baseline [percent]			Δ 92 [1.3]	Δ 27 [0.4]	Δ 13 [0.2]	Δ 20 [0.3]	Δ 3 [0.0]
Model 2	Labor force per year	7,093	7,082	6,952	7,043	7,064	7,053	7,078
	Difference from baseline [percent]			Δ 130 [1.9]	Δ 39 [0.6]	Δ 18 [0.3]	Δ 29 [0.4]	Δ 4 [0.1]
Model 3	Labor force per year	7,093	7,010	6,960	6,984	6,991	6,988	7,007
	Difference from baseline [percent]			Δ 50 [0.7]	Δ 103 [1.5]	Δ 96 [1.4]	Δ 99 [1.4]	Δ 80 [1.1]
Females								
Model 1	Labor force per year	4,054	4,057	4,028	3,979	4,013	4,040	4,056
	Difference from baseline [percent]			Δ 29 [0.7]	Δ 77 [1.9]	Δ 44 [1.1]	Δ 17 [0.4]	Δ 1 [0.0]
Model 2	Labor force per year	4,054	4,061	4,025	3,965	4,007	4,040	4,060
	Difference from baseline [percent]			Δ 35 [0.9]	Δ 95 [2.4]	Δ 54 [1.3]	Δ 21 [0.5]	Δ 1 [0.0]
Model 3	Labor force per year	4,054	4,201	4,174	4,164	4,175	4,188	4,200
	Difference from baseline [percent]			Δ 26 [0.6]	Δ 36 [0.9]	Δ 25 [0.6]	Δ 12 [0.3]	Δ 1 [0.0]
Based on SSW		Actual	Baseline	Without reform since:				
				1985	1989	1994	2000	2004
Males								
Model 1	Labor force per year	7,093	7,086	6,681	6,914	7,005	7,052	7,082
	Difference from baseline [percent]			Δ 405 [6.1]	Δ 172 [2.6]	Δ 81 [1.2]	Δ 34 [0.5]	Δ 4 [0.1]
Model 2	Labor force per year	7,093	7,081	6,635	6,892	6,992	7,044	7,076
	Difference from baseline [percent]			Δ 446 [6.7]	Δ 189 [2.8]	Δ 89 [1.3]	Δ 37 [0.6]	Δ 5 [0.1]
Model 3	Labor force per year	7,093	7,080	6,962	7,005	7,031	7,055	7,076
	Difference from baseline [percent]			Δ 117 [1.8]	Δ 81 [1.2]	Δ 55 [0.8]	Δ 32 [0.5]	Δ 10 [0.2]
Females								
Model 1	Labor force per year	4,054	4,058	3,979	4,017	4,041	4,056	4,058
	Difference from baseline [percent]			Δ 80 [2.0]	Δ 42 [1.0]	Δ 17 [0.4]	Δ 3 [0.1]	Δ 0 [0.0]
Model 2	Labor force per year	4,054	4,062	3,973	4,016	4,043	4,059	4,062
	Difference from baseline [percent]			Δ 89 [2.2]	Δ 47 [1.2]	Δ 19 [0.5]	Δ 3 [0.1]	Δ 0 [0.0]
Model 3	Labor force per year	4,054	4,193	4,166	4,174	4,183	4,191	4,193
	Difference from baseline [percent]			Δ 28 [0.7]	Δ 19 [0.4]	Δ 10 [0.2]	Δ 2 [0.0]	Δ 0 [0.0]

(Note) The figures in [] is a percentage of the level of "Without reform since 1985" case.

Why are people excluded from safety nets and how do they live without them?

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Abstract

In this study, we examine what socioeconomic factors are associated with non-participation in social insurance plans and how exclusion from safety nets affects people's well-being and health, on the basis of micro data collected from two social surveys in Japan. The key findings are summarized as follows: First, non-participation in social insurance plans is associated with several disadvantageous socioeconomic factors in childhood and later life. Second, the associations between non-participation and socioeconomic factors differ for public pension and health insurance plans. Third, non-participants in social insurance plans cannot afford to save much money in general and have no adequate preparation for old age. Fourth, those excluded from safety nets suffer unfavorable health conditions, especially in terms of mental health. These results underscore the importance of policy measures aimed at avoiding exclusion from safety nets.

1. Introduction

We need safety nets in order to protect us from a variety of social risks, such as diseases, unemployment, and inability to work in old. In recent years, however, an increasing number of people have been excluded from these safety nets. According to the Ministry of Health, Labour and Welfare, more than 40% of those who are supposed to pay National Pension Insurance premiums did not pay them in 2008. In addition, anecdotal evidences show cases in which parents reduce the visits of their children to the doctor because they are not covered by any health insurance plan since they are on low income.

In this study, we attempt to examine what socioeconomic factors are associated with non-participation in social insurance plans and how exclusion from safety nets affects people's well-being and health, on the basis of the micro data collected from two social surveys in Japan: the *National Survey on Social Security and People's Life* (NSSPL), conducted by the National Institute of Population and Social Security Research, and the *Comprehensive Survey of the Living Conditions of the People on Health and Welfare* (CSLCPHW), conducted by the Ministry of Health, Labor, and Welfare.

This paper is arranged as follows. In Section 2, we provide a brief description of the data used for the analysis and the basic attributes of the sample. In Section 3, we analyze the associations between non-participation in social insurance plans and socioeconomic factors. In Section 4, we investigate how people's well-being and health are related to non-participation in social insurance plans. Finally, in Section 5, we summarize the discussion and provide some policy implications.

2. Data

2-1. Surveys

Our empirical analysis in this paper is based on micro data collected from the NSSPL and CSLCPHW (questionnaires for households and health), both of which were conducted in 2007. The NSSPL covers household members aged 20 to 69 years. The NSSPL used samples

randomly taken from the samples used for the CSLCPHW conducted in the same year, making it possible to match the data between the two surveys.

The data of the NSSPL are divided into those of household questionnaires and those of individual ones: the number of household questionnaire samples is 10,766 (valid response rate: 68.2%) and that of individual questionnaires distributed to the heads and members of households, 17,188 (83.1%). In the current analysis, we collect health variables (subjective sense of health, psychological health index, etc.) from the CSLCPHW and the variables of socioeconomic factors and retrospective assessment of past living conditions from the NSSPL.

Our analysis in this paper is concentrated on individuals aged 25 to 59 years, because those 60 years and over do not need to pay NPI premiums and also because a significant portion of those aged below 25 are students.¹ The greatest attention is paid to whether the samples are protected by the existing safety nets. In the NSSPL, the samples were asked to choose the comment that describes their participation in public pension and health insurance plans from among “I participate,” “I participated [in the past but don’t at present],” and “I have never participated.” We define those who answered “I participate” as those who participate and those who said “I participated” or “I have never participated” as those who do not participate. As a result, 54.5% of the original samples covered by the individual questionnaires, or 9,376 persons (males: 4,626; females: 4,750), were used for the analyses in this study. In addition, we exclude those samples having no data for some of the variables used in the analysis in question.

2-2. Study sample

We start with observing what kind of people are excluded from safety nets. According to the definition stated above, we find that those who participate in both public pension and health insurance plans account for 89.7% of the whole sample. This means that those who are not protected by safety nets due to non-participation in one or both of the plans amount to roughly

¹ In the case of public pension plans, it is difficult to understand precisely the meaning of “participation” for those above 60 years; it may indicate either that they are paying premiums or that they are receiving pension benefits.

10% of the working generation. This figure appears to be exaggerated; there must be some respondents who have limited knowledge about their public insurance plans.² However, it suggests that a non-negligible portion of the population are excluded from safety nets, although social security systems in Japan are often characterized as universal.

More specifically, the people who do join either a public pension plan or health insurance plan account for 8.6% and 4.8%, respectively, and those participating in neither of the plans, 3.2%. It is natural that the non-participation rate of health insurance plans is lower than that of public pension plans, considering that the risk of diseases is more imminent than that of insufficient income in old age.

3. Why are people excluded from safety nets?

3-1. Socioeconomic factors affecting participation in social insurance plans

This section summarizes the socioeconomic characteristics of those excluded from safety nets.³ Figure 1 shows how income levels differ between participants and non-participants in social insurance plans.⁴ The average annual income of males and females who do not participate in either one or both of public pension and health insurance plans is about 51% and 42%, respectively, of that of participants in both plans. The annual income of those who participate in neither a public pension nor health insurance plan is only one-third that of those who join both plans, both for males and females. These figures underscore that the payment of premiums is highly related to income constraints

The next question is how participation in social insurance plans is related to the

² The dependent spouse and other family members do not need to pay social insurance premiums, so some of them in the NSSPL may have answered that they do not participate in any social insurance plan.

³ Many empirical analyses have been conducted as to non-participation in the social insurance plans and non-payment of their premiums, mainly regarding the NPI. It has often been pointed out that the main reasons for non-payment of NPI premiums are liquidity constraints and joblessness for a long time (Abe, 2001; Suzuki and Zhou, 2001; Suzuki and Zhou, 2006; Yuda, 2006; Komamura and Yamada, 2007; Sakai, 2009). Non-participation in public health insurance and long-term nursing care insurance plans as well as non-payment of their premiums have often been analyzed as well. For example, Yuda (2006) and Sakai (2009) found that liquidity constraints are a key determinant of non-payment.

⁴ Average annual income for all the samples is 5,221,000 yen for males and 1,775,000 yen for females.

occupational status of people. On the basis of the questionnaires for the NSSPL, we classify occupational status into regularly employed (including managers at companies, organizations, etc.), non-regularly employed (part-timers, temporary workers dispatched from staff agencies, and contract employees/temporaries), self-employed (including family members working for family businesses), home (those engaged in housework exclusively), others, and unemployed. Figure 2 compares the rates of non-participation in a public pension plan and health insurance by the foregoing occupational status classification. As evident from this figure, the rates of non-participants in a public pension plan and health insurance plan are as low as 3.6% and 2.0%, respectively, for regular employees, compared to 11.7% and 6.5% for non-regular employees; those of other occupational status are considerably higher than that of regular employees.

The fact that the participation in social insurance plans is closely related to occupational status can easily be understood in the light of the premium payment system of the current social insurance plans. Regular employees are covered by the Employees' Pension Insurance (EPI, for private sector employees) or a Mutual Aid Association (for public sector employees), and the premiums for these plans are automatically withdrawn from their salaries. Hence, regular employees are unlikely to be excluded from social insurance plans. In contrast, a non-negligible portion of non-regular employees is not covered by any employees' insurance plan nor by social insurance plans for the self-employed and farmers, such as the NPI and National Health Insurance (NHI).

To be sure, non-regular employees are supposed to be covered by the NPI and NHI. However, their income is much lower than that of regular employees, making it difficult for them to pay their premiums. For the samples used in this analysis, the average annual income is 4,775,000 yen for regular employees as compared with 2,211,000 yen for non-regular employees and 3,521,000 yen for self-employed persons, indicating large income gaps between regular employees and other groups.

Even if non-regular employees pay premiums, they face their regressive aspects; the fixed-amount premiums (for the NPI) or the fixed-amount part of premiums (for the NHI) are relatively heavy for low-income households. Although measures to reduce the amount of or to exempt from premiums are taken for low-income individuals, the heavy burdens on them are

not fully alleviated. Thus, there is a possibility of being excluded from safety nets for those other than regular employees under the current social insurance plans.

It is also reasonable to expect that the more frequently people change jobs, the more likely they are to be uncovered by social insurance plans. We have to control for age, however, because the frequency of job changes naturally increases with age. We have to control for sex as well, because women tend to change their occupational status from full-time employees to part-time workers once they get married. Figure 3 shows the odds ratios for being uncovered by public pension and health insurance plans in response to the number of job changes, after controlling for age and sex, using those who have never changed jobs as a reference.

For public pension plans (figure at left), the odds of being uncovered for those who have changed jobs once or twice are, respectively, 0.96 times and 1.17 times that of those with no change in jobs. In both cases, however, the 95% confidence interval of odds ratios shown by bars includes 1, showing no significant difference between them. For people who have changed jobs three times, four times, or more, the odds ratios are 1.31 and 1.76, respectively, both of which are significant. For health insurance plans (figure at right), the odds of being uncovered are not significant for those who have changed jobs up to three times. This suggests that the imminent risk of diseases is much more serious than reduced pension benefits, which is not likely to be realized until people become old.

It is natural that as people change jobs more frequently they become more likely to lack coverage by social insurance plans. When people change jobs, they may find it difficult to switch to another social insurance plan or may forget to do the necessary procedures. However, Sakai (2009) argued that a continuous no-earnings period after leaving the job has a larger impact on non-participation than missing the procedures for switching to a new plan. It is impossible to distinguish between the effects of job changes and low income in our estimation. Indeed, we find that the average income of those having never changed jobs is 4.59 million yen, compared to 3.63, 4.04, and 2.98 million yen for those who have changed jobs once, twice, three times, four times, or more, respectively. Thus, we can suspect that people tend to face tighter income constraints as they change jobs.⁵ Moreover, the proportion

⁵ It should be noted that the average income is a little higher for those who have changed jobs four times or more than others. It suggests that there are some people who repeatedly change jobs for higher earnings,

of regular employees is 50.8% for those who never changed jobs, compared to 36.1%, 32.4%, 32.9%, and 30.8% for those who have changed jobs once, twice, three times, and four times or more, respectively.

Next, we focus on academic attainment, another important socioeconomic factor. Figure 4 highlights the influence of academic attainments on non-participation; both for public pension and health insurance plans, the lower educational attainment is, the higher the rate of non-participants becomes. The proportion of non-participants in any public pension or health insurance plan is 4.2% and 2.3% for those who graduated from a university or a higher institution, respectively, but as high as 15.8% and 8.3% for those who graduated from junior high schools. However, the results in Figure 4 may reflect not only the direct effect of educational attainment but also its indirect effect through income and occupational status.

Finally, we examine how living conditions in the past differ between participants and non-participants in social insurance plans.⁶ The respondents of the NSSPL were asked to choose their answer about their living standards at several points of time in the past on a five-point scale: “very low,” “low,” “average,” “high,” and “very high.” Figure 5 compares participants and non-participants in social insurance plans in terms of the rates of those who answered “very low” or “low” at certain points of time. As evident from this figure, non-participants assess their living standards as lower than those of participants at each point of time in the past. Because these answers were based on the respondents’ memories, caution should be exercised in interpreting them. However, we can suppose that current non-participation in social insurance plans is affected not only by current living conditions but also past ones.

3-2. Regression analysis

The analyses discussed thus far have limitations; when examining how a particular factor is related to non-participation in social insurance plans, interactions with other socioeconomic factors are not considered. For example, the rate of regular employees is considerably lower

taking advantage of the high-level specialized skills they have acquired.

⁶ There have been many empirical studies that discussed the impact of childhood poverty on socioeconomic outcomes in later life (Duncan *et al.*, 1998; Oshio *et al.*, 2010; Abe, 2011; Oishi, 2007).

for non-participants than participants, but this is likely to be related not only to differences in occupational status but also to different levels of income and/or educational attainment.

Therefore, we explore regression analysis here to analyze the associations of non-participation in social insurance plans along with various factors.

For regression analysis, we construct a binary variable that is equal to 1 for non-participation in social insurance plans (public pension and health insurance plans, respectively) and to 0 for participation, and estimate three types of probit models to explain non-participation. In Model I, we employ three independent variables: poverty at age 15 (1 for “very low” and “low”; base = all other cases), sex (base = males), and age (20s, 30s, 40s; base = 50s). Poverty at age 15 is chosen as a variable representing the living standard in childhood. At age 15, individuals are at the final stage of compulsory education and entirely dependent on their parents in most cases. We examine how poverty at age 15 affects non-participation in social insurance plans in later life, after controlling for sex and age.

In Model II, we include five sets of independent variables. These are academic attainment (graduated from junior and senior high schools; base = graduates from universities or above), occupational status of the first job (non-regularly employed, self-employed; base = regularly employed), frequency of job changes (once, twice, three times, four times or more; base = none), and marital status (unmarried, divorced, separation by death; base = married), as well as the independent variables used for Model I. We attempt to examine not only the associations of non-participation in social insurance plans with these five factors but also how the impact of poverty at age 15 is changed by adding them as independent variables.

In Model III, we further add income variables to Model II including five dummy variables of no income and 1st (lowest) to 4th quintile of income (base = 5th quintile of income). The earlier studies generally show that income constraints increase the probability of non-participation in social insurance plans. Model III aims at examining how the relation between the other variables and non-participation in social insurance plans is changed by adding income variables.

All of the three models have a common problem: poverty at age 15 is not free from the recall bias, because it is based on the respondent’s retrospective and subjective assessment. To reduce this bias, we estimate the recursive bivariate probit model, which consists of (i) the

main equation for predicting current non-participation by poverty at age 15 and other variables and (ii) the auxiliary equation for predicting poverty at age 15 by the instrumental variables. As the instrumental variables in the second equation, we include co-residence with parents (living separately from father, living separately from mother, living separately from both parents; base = living together with parents), the breadwinner (parents, mother only, any person other than parents; base = father only), and the number of siblings (including the respondent) (two, three, four or more; base = the case where the respondent is the only child). In addition, we include sex (base = males) and age (20s, 30s, 40s; base = 50s) as control variables.

Tables 2 and 3 summarize key estimation results for non-participants in public pension and health insurance plans, respectively. The results of the auxiliary equation for poverty at age 15 and that of the estimated results of sex, age, and other control variables are not presented to save space. The results are presented in terms of marginal effects, which show to what extent the probability of non-participation in a public pension or health insurance plan increases when the value of each of the variables increases from 0 to 1, assuming that all the other variables do not change.

From Tables 2 and 3, we obtain the following findings. First, the comparison between Models I and II reveals that the impact of childhood poverty is substantially mediated by subsequent socioeconomic factors. The impact of poverty at age 15 is significant for non-participation in both public pension and health insurance plans in Model I, where subsequent socioeconomic factors are not controlled for. In contrast, in Models II and III, where these factors are controlled for, the impact of poverty at age 15 is insignificant for health insurance plans, and less significant for public pension plans.

Second, the comparison between Model II and Model III underscores that participation in public pension and health insurance plans is affected differently by current occupational status. In Model II that does not include income, current occupational status has a significant impact on non-participation in health insurance plans. In contrast, it becomes insignificant in Model III that does include income. For public pension plans, the impact of the current occupational status remains significant even if we included income.

We also notice that, especially for public pension plans, the probability of

non-participation is higher among those whose first job takes the form of non-regular employment. Meanwhile, the impact of the frequency of job changes on non-participation differs between public pension and health insurance plans. It is not significant at all for health insurance plans, whereas it is significant for public pension plans only if no income factor is taken into account and the frequency is four times or more. These results are not consistent with the results shown in Figure 3, suggesting that the association between the frequency of job changes and non-participation is considerably absorbed into the association with other socioeconomic factors, especially income.

4. What happens when people are excluded from safety nets?

4-1. Savings and preparation for old age

The next question is how those protected by safety nets and those excluded from it differ with respect to economic and health conditions in terms of savings, preparation for old age, and health conditions. It is difficult to identify causality between non-participation in social insurance plans and economic/health conditions, and non-participation and unfavorable conditions may be explained by common factors such as income and occupational status. Still, it is important to examine the extent to which exclusion from a safety net can be a proxy of unfavorable status with regard to well-being. If we observe that those excluded from safety nets suffer greater difficulties in their daily life than those protected by safety nets, it may have an important implication for constructing safety nets.

We start with focusing on savings and preparation for retirement in Table 4. As evident from this table, the level of savings of non-participants in social insurance plans is considerably lower than that of participants. This tendency is more marked for non-participants in public health insurance plans than those in public pension plans. This is consistent with the fact that non-participation depends on the income factor for health insurance plans more so than for public pension plans.⁷

⁷ Another possible explanation may be that those who do not save much money have a preference for high living and/or low risk aversion and therefore do not think that social insurance is attractive. The validity of

In the case of public pension plans, however, there may be people who prefer not to rely on public pensions, especially among those who are not automatically covered by the EPI. In reality, however, the rate of those who are saving money or who join a personal pension plan to prepare for old age is lower for non-participants in public pension plans. This suggests that there is no substitutable relationship between public pension plans and personal saving for old age. If we look at the participants in personal pension plans only, non-participants in public pension plans pay a somewhat higher amount of premiums (21,400 yen a month on average) than participants (18,900 yen); however, it should be noted that there is considerable variance of premiums.

The respondents in the NSSPL were asked about the main income sources that they planned to rely on after age 65 years (multiple answers). Non-participants in social insurance plans have a much higher rate of those who answered “have no plan” than participants, and their reliance on public and personal pension plans and savings is low in general.⁸ The proportion of those who plan to continue working in their old age and rely on wage income is a little higher among non-participants in any public pension plan than those in other groups. Meanwhile, the intention to rely on public welfare support is not very high among them, suggesting no serious moral hazard problem among non-participants in social insurance plans.

4-2. Health conditions

Finally, we examine the association between non-participation in social insurance plans and health. As health variables, we utilize four measures obtained from the health questionnaires for the NSSPL. First is self-rated health. The respondents in the survey were asked to answer the question “How is the condition of your health at present?” on a five-point scale: “good,” “somewhat good,” “average,” “somewhat poor,” and “poor.” We set up a binary variable for the lowest two categories (“somewhat poor” or “poor”). Second is subjective symptoms. We allocated one to the answer “yes” to the question “Do you have any problem (subjective symptom) due to an illness, injury, or other issue in recent times?” Third is the quality of life:

this explanation is discussed later.

⁸ It is strange to observe that the rate of those who answered that they will rely on public pension benefits was over 60% among those who did not join any social insurance plan.

whether any health problem affects the respondent's daily life. We allocated one to the answer "yes" to the question "Does any health problem affect your daily life at present?"

In addition to these variables of general health conditions, we consider K6, which is a widely used measure of depression (Kessler *et al.*, 2002). The respondents were asked to answer the six questions: "Have you become nervous?" "Have you felt a sense of despair?" "Have you felt restless and unsettled?" "Have you felt depressed and your spirits not been lifted no matter what happened?" "Have you felt anything you do will be useless?" and "Have you felt you are a worthless person?" on a five-point score: "always," "usually," "sometimes," "occasionally," and "never." We assign a score to each of these answers, 0 (= "never") to 4 ("always"), and calculate the total of the scores for the six answers (0–24). It has been accepted that a score of 13 or more indicates serious mental disorder and a score of 5 or more shows the existence of psychological stress on a general level (Kessler *et al.*, 2010; Sakurai *et al.*, 2011).

We conduct logit regression analysis to assess the association between non-participation in social insurance plans and health at two stages. At the first stage, we control for sex and age only. At the second stage, we control for not only sex and age but also socioeconomic factors and marital status. Non-participants in social insurance plans tend to be in a socioeconomically disadvantageous position, especially in terms of income. Hence, even if health is found to be poorer among non-participants in social insurance plans than among participants at the first stage, that does not necessarily mean that non-participation in social insurance plans are the problem. This is why we conduct the second stage analysis. As the socioeconomic factors and marital status are to be controlled for, we utilized the same variables used for Tables 2 and 3.

The estimation results are summarized in Table 5. This table shows the odds ratios (as well as their 95% confidence intervals) of each health status for non-participants in a public pension plan (upper columns) and in a health insurance plan (lower columns). The left half of the table summarizes the results obtained at the first stage where only sex and age are controlled for, while the right half summarizes those obtained at the second stage in which the socioeconomic factors and marital status are additionally controlled for. From this table, we can observe the following points:

First, the odds of poorer health conditions are significantly higher among non-participants than among participants for both public pension and health insurance plans, with the association between non-participants in public health insurance plans and subjective symptoms being the only exception. It should be noted, however, that the observed association can be at least partly spurious, as both poor health conditions and non-participation in social insurance plans are caused by other common factors.

After additionally controlling for socioeconomic factors and marital status, we observe that the odds ratios of poor health conditions for non-participation in social insurance plans become smaller in general, with the association between non-participants in public pension plans and subjective symptoms being the only exception. A closer look at the results reveals that the associations of non-participation in public pension plans with self-rated health and subjective symptoms remain significant, while other associations become insignificant.

More interestingly, the association with depression remains significant for both public pension and health insurance plans, even after controlling for socioeconomic factors and marital status. These results underscore that a defenseless state against social risks due to exclusion from safety nets has a negative psychological effect, supporting the view that people are risk averse in general. A lack of coverage by social insurance plans makes individuals psychologically unstable.

5. Summary and policy implications

In this study, we have examined what socioeconomic factors are associated with non-participation in social insurance plans and how exclusion from safety nets affects people's well-being and health, using the micro data collected from the two social surveys in Japan: NSSPL and CSLCPHW. Key findings are summarized in what follows.

First, non-participation in social insurance plans is associated with several disadvantageous socioeconomic factors in childhood and later life. The impact of childhood poverty raises the probability of non-participation in social insurance plans, and a substantial portion of the impact is mediated by subsequent socioeconomic factors such as academic

attainment, occupational status, job changes, and income. In the case of the public pension plan, however, the impact of childhood poverty remains even after being mediated by other factors.

Second, the associations between non-participation in social insurance plans and socioeconomic factors differ for public pension and health insurance plans. For health insurance plans, income is a dominant determinant of non-participation in them. For public pension plans, not only income but also occupational status matters; occupational status other than that of regular employees serves as a constraint on participation in them.

Third, non-participants in social insurance plans cannot afford to save money in general and have no adequate preparation for old age. Those who stay outside safety nets have not voluntarily chosen such a situation; non-participation in social insurance plans means the same thing as being placed in a socioeconomically disadvantageous situation.

Fourth, those excluded from safety nets are in unfavorable health conditions. This situation is especially serious for non-participants in public pension plans. In addition, even after controlling for socioeconomic and other factors, non-participants in social insurance plans have a greater degree of depression than participants. An exposure to social risks without any protection by social insurance plans has a negative impact on mental health.

These results have clear policy implications; policy measures aimed at avoiding any further increase in those excluded from safety nets are needed. Most of all, the fact that lower income and unstable working conditions such as non-regular employment raise the probability of non-participation in social insurance plans highlights the problem of the existing social insurance plans. In fact, social insurance plans other than those for employees such as the NPI and NHI have the fixed component of premiums, which is regressive in nature despite some measures to alleviate it. In addition, when people repeatedly change jobs as non-regular employees, they tend to fail to smoothly make the switch to new social insurance plans. Combined with income constraints, this situation is likely to raise the possibility of their being excluded from safety nets.

To sustain social security benefits at an adequate level under the impact of declining birth rates and an aging population, the only recourse is to increase the social security contributions and taxes on the working generation. Hence, the factors that exclude people from safety nets

and make them remain outside of them are likely to strengthen further. Moreover, an increasing tendency toward non-regular employment will continue in the future. To prevent exclusion from safety nets, we would need to introduce new types of policy measures that aim at, for example, alleviating the regressiveness of premium payment burdens, expanding the coverage of the employees' insurance plans, and offsetting the burden of premium payments by tax credit.

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