

# **Are Women Preparing for Old Age? Evidence from Japan**

**Yoko Niimi**

Doshisha University and the Asian Growth Research Institute

Working Paper Series Vol. 2026-08

May 2026

The view expressed in this publication are those of the author(s) and do not necessarily reflect those of the Institute.

No part of this article may be used or reproduced in any manner whatsoever without written permission except in the case of brief quotations embodied in articles and reviews. For information, please write to the Institute.

**Asian Growth Research Institute**



## **Are Women Preparing for Old Age? Evidence from Japan**

**Yoko Niimi**

**Doshisha University and the Asian Growth Research Institute**

Address: Imadegawa-agaru, Shinmachi-dori, Kamigyo-ku, Kyoto 602-0047, Japan

Email: [yniimi@mail.doshisha.ac.jp](mailto:yniimi@mail.doshisha.ac.jp)

**May 2026**

### **Abstract**

One of the key challenges that population aging poses is to ensure that people have an adequate level of saving for old age. The gendered aspect of old-age saving is particularly important given that women tend to contribute less than men to pension programs because of their weaker labor market attachment and lower earnings over their life cycles even though women tend to live longer than men and thus need to save more than men. Using data from the Japanese Panel Survey of Consumers, this paper assesses women's preparedness for old age by examining whether or not women are saving for old age and how much they are trying to save for that purpose outside of pension programs. It finds that, in comparison to married women, unmarried women are less likely to be saving for old age. The regression results also suggest that women in irregular employment and those with limited financial resources are less prepared for old age. These results raise serious concerns about the possible risk of old-age poverty among unmarried women, particularly those who have worked mainly as irregular workers, if at all, as they are less likely to be covered by the Employees' Pension Insurance System.

Keywords: gender, old age, pension, retirement, saving

JEL Classification: D14, D31, J14, J16

## 1. Introduction

One of the key challenges that population aging poses is to ensure that people have an adequate level of saving for old age. While public pension programs continue to play a major role in people's old-age saving in most developed countries, rapid population aging imposes a serious fiscal burden on these programs. Individuals are therefore increasingly being encouraged to take more responsibility for their old-age saving. In the case of Japan, it is generally thought that it may still be necessary to do additional saving for old age, even for those who have contributed to pension programs throughout their working lives. According to a report issued in 2019 by the Working Group of the Financial System Council of the Financial Services Agency, an average elderly couple would need 20 million yen (about US\$125,000)<sup>1</sup> in addition to their public pensions to fund a 30-year post-retirement life.<sup>2</sup> This warning, which later came to be called the "20 Million Yen Problem," has received considerable public attention and raised awareness of the importance of saving for old age outside of pension programs.

According to the life-cycle model (e.g., Modigliani and Brumberg, 1954), people accumulate wealth during their working lives and decumulate wealth after retirement to smooth consumption over the life cycle. One of the important questions we need to ask in this context is how prepared women are for old age. The gendered aspect of old-age saving is particularly important given that women tend to contribute less than men to pension programs because of their weaker labor market attachment and lower earnings over their life cycles even though women tend to live longer than men and thus need to save more than men. Women's fewer available resources and longer life expectancies suggest that women's financial security in old age is potentially more at risk than men's (Angelici et al., 2022).

While gender gaps in old-age saving and in wealth more generally remain understudied in comparison to other aspects of the gender gap, such as income and education, recent years have seen an increasing number of empirical studies that examine the gender gap in old-age saving. Previous studies predominantly show that women have less pension wealth than men (e.g., Warren, 2006; Feng et al., 2019). According to OECD (2021), the average gender gap in pensions (both public and private), defined as the difference between the mean retirement income of men and women divided by the mean retirement

---

<sup>1</sup> Conversions are made based on an exchange rate of US\$1 = 160 Japanese yen throughout the paper.

<sup>2</sup> Financial Services Agency ([https://www.fsa.go.jp/singi/singi\\_kinyu/tosin/20190603.html](https://www.fsa.go.jp/singi/singi_kinyu/tosin/20190603.html))

income of men among pension beneficiaries aged 65 and above, was found to be about 26% among OECD member countries. Such a significant gap in retirement income raises serious concerns about whether women are saving adequately for old age outside of pension programs.

The main aim of this paper is to examine women's financial preparedness for old age by using data from the Japanese Panel Survey of Consumers. Given that pension programs are closely linked to employment and that women tend to have relatively weak attachment to the labor market, it is important to know how women are preparing for old age outside of pension programs. The key contributions of this paper to the literature are twofold. First, since previous studies on old-age saving tend to focus more on pension wealth, this paper extends existing work by looking specifically at women's financial preparedness for old age outside of pension programs.

Second, while existing studies look primarily at the case of Western societies, this paper examines the situation in Japan. Japan offers an interesting case study given the persistence of a relatively large gender gap compared to other countries. This is partly because gender roles within households remain more clearly delineated in Japan than in Western societies. With respect to the Global Gender Gap Index of the World Economic Forum, Japan was in 118<sup>th</sup> place out of 148 countries in 2025 (World Economic Forum, 2025). Indeed, while the OECD average gender gap in pensions was about 26%, as noted earlier, the gap for Japan was found to be about 47%, which was by far the largest among OECD member countries for which data were available (OECD, 2021). This is despite the fact that Japanese women have the longest life expectancy at age 65 (24.4 years old) and that Japan's gender gap in this measure (4.9 years old) is one of the largest among OECD member countries.<sup>3</sup>

The rest of this paper is structured as follows. The next section reviews the literature with particular focus on empirical work on the gender gap in old-age saving. Section 3 describes the context of Japan. Section 4 describes the data and empirical methods. Section 5 presents the estimation results. Section 6 contains some concluding remarks.

---

<sup>3</sup> The figures on life expectancy at age 65 are for 2023 and come from OECD Data Explorer (available at <https://data-explorer.oecd.org/>)

## 2. Literature review

Recent years have seen an increasing number of empirical studies that examine the gender wealth gap although it remains understudied in comparison to other aspects of the gender gap, such as income and education. This section reviews the literature with a focus on the gender gap in old-age saving.<sup>4</sup>

Previous studies have shown that women tend to have less old-age saving than men. Given that public pension systems and occupational pension plans are based on earnings, women's weaker labor market attachment and their lower wages are found to be some of the key drivers behind the gap. Warren (2006) finds a gender gap in pension wealth in the United Kingdom (UK). She shows that the gap is the result of women's fewer years of pension scheme membership, their greater reliance on public pensions rather than on occupational pensions, and their lower contributions due to their weaker labor market attachment and their concentration in lower waged jobs when in paid employment.

Using administrative data from a pension fund in Australia, Feng et al. (2019) look at the cumulative effect of women's labor market characteristics on their retirement saving. They find that the gender gap in retirement saving arises at an early stage of paid working life and that it persists over time. This reflects the fact that women are more likely to leave paid work or move to part-time and/or casual work than men to accommodate caregiving responsibilities, interrupting women's contribution flows (Feng et al., 2019). They also point out that even when women return to full-time work, the gap in retirement saving remains because of foregone wages and associated retirement saving as well as of the adverse effect of career breaks on future incomes.

Similarly, Austen and Mavisakalyan (2018) show that, in Australia, the gender gap in long-term earnings and hence in retirement wealth largely reflects the economic consequences of the gendered roles associated with parenthood. They argue that having a Bachelor's degree improves women's earnings, but it does not eliminate the gap because of the negative effect of parenthood on women's earnings. Best and Saba (2021) also look at the gender superannuation gap in Australia and find that women's work patterns and wage rates adversely affect their contributions, explaining about 30% of the total superannuation gap.

---

<sup>4</sup> For a more comprehensive review of the literature on women's retirement wealth, see, for example, Jefferson (2009).

Weller and Tolson (2020) specifically look at the implications of women's caregiving burden for their retirement saving in the United States (US). They show that the potential risk of caring for someone has a greater adverse effect on retirement saving among women than among men. They find that women facing caregiving risks are less likely to participate in a retirement plan than those without such risks while such a gap is either nonexistent or much smaller in the case of men. One way to address the adverse effect of women's caregiving burden on their retirement saving is to provide contribution credits for the period allocated to caring for others (Jefferson, 2009). Cordova et al. (2022) find that, in Germany, pension wealth helps reduce the gender wealth gap in the lower half of the wealth distribution due to the redistributive nature of the statutory pension scheme, such as caregiver credits.

Despite the observed gender gap in retirement saving, it should be noted that married women can potentially benefit from their spouses' pensions. However, while widows can still enjoy survivors benefits even if they become single, the same may not apply to women who are divorced or separated. LaRochelle-Côté et al. (2012) examine the effect of the death of a spouse and divorce on income replacement rates during the retirement years in Canada. They find that the negative effect of separation or divorce is greater than that of widowhood in the case of women. The greatest effect is found among women from the top income quintile families who rely more on private pension and investment income whereas reliance on public pension income reduces the effect of divorce for women from lower-income families. By contrast, among men, separation or divorce has little effect on replacement rates regardless of whether the family is rich or poor, and widowhood actually raises replacement rates among middle- and high-income men.

If women are conscious of their lower retirement income compared to men due to their lower contributions to pension schemes, women may do more private saving for old age than men do. However, based on individual-level data on the use of financial products in more than 140 countries, Demirgüç-Kunt et al. (2016) show that about 25% of adults across the world save for old age and that women are slightly less likely than men to save for this purpose. Similarly, Fernández-López et al. (2015) find that, in European countries, women are less likely to save for old age than men although the determinants of this decision are similar for women and men.

Lehrer et al. (2023) find that, in Canada, while women are more likely to save at all ages,

conditional on participation in pension and retirement saving plans, they save a smaller amount. Excluding tax-advantaged saving plans, women tend to choose investments that, on average, offer a lower rate of return than their male counterparts. This might be partly explained by differences in financial literacy and/or risk aversion between women and men. Men are generally found to have a higher level of financial literacy than women (Lusardi and Mitchell, 2008; Tinghog et al., 2021), and women tend to be more risk-averse than men (Croson and Gneezy, 2009). Indeed, Preston and Write (2023) show that, in Australia, the gender gap in financial literacy is an important determinant of the gender gap in retirement saving. Best and Saba (2021) also point out the role of gender differences in financial literacy and risk aversion in explaining the gender superannuation gap in Australia. Moreover, Giannikos and Korkou (2023) show that, in the US, single women tend to take less risk than single men in their retirement wealth building although this gender gap has become smaller over time. On the other hand, Neelakantan and Chang (2010) argue that while gender differences in risk aversion partly explain the gender gap in retirement saving, a fraction of the gap remains unexplained.

Mandal and Brady (2020) look at the role of marriage and gender on asset allocation and find that, in the US, while married men are more likely to hold a greater share of their funds in equities in individual retirement accounts than married women in their early to mid-30s, this gender gap becomes negligible by retirement age as husbands and wives closely mimic each other's asset allocations. They also show that, at retirement, married men and women hold a greater share of their funds in stocks than divorced or widowed individuals with women having particularly low shares. In addition, Tamborini and Purcell (2016) find a difference between single-female and couple households in the effect of children on retirement preparation. They find that, in the US, additional children are associated with reduced retirement saving motives and with a reduced likelihood of owning a retirement account among single-female households while such associations are not found for couple households.

As far as the literature on Japan is concerned, to the best of the author's knowledge, there is no previous work that examines specifically Japanese women's preparedness for old age. There are a number of studies that look at old-age saving behavior in Japan (e.g., Horioka and Watanabe, 1997; Horioka and Okui, 1999). For example, Horioka and Watanabe (1997) find that, out of 12 different saving motives examined, saving for old-age and precautionary motives is of dominant importance. These studies, however, do not look at the gender dimension.

Previous studies that are relatively close to the present work are the studies by Kureishi and Wakabayashi (2013) and Sekita (2011). Using the same dataset that the present work uses, Kureishi and Wakabayashi (2013) examine what motivates never married women to save. They find that when young women face a relatively high risk of income fluctuation due to marrying late or remaining unmarried, they are more likely to save for precautionary purposes than otherwise. As for Sekita (2011), she examines the level of financial literacy in Japan and finds that women tend to have a lower level of financial literacy than men. Since she also finds that the level of financial literacy is positively associated with the probability of having a retirement saving plan, we can infer that women are likely to be less prepared for old age than men. While both studies help us better understand women's saving behavior in Japan, this paper aims to more specifically examine how women are preparing themselves for old age.

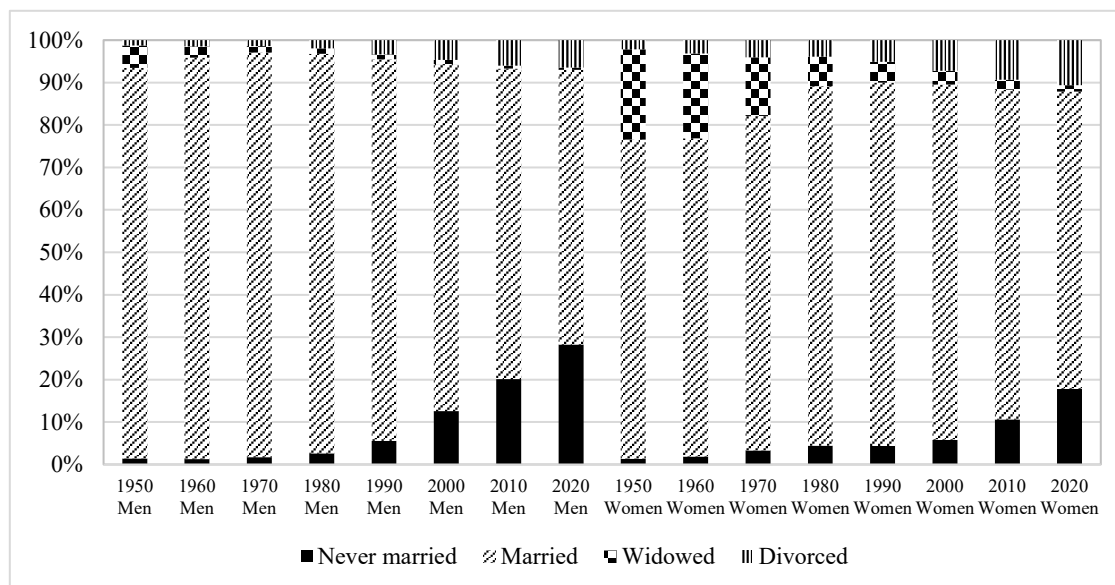
### **3. Japanese context**

Japan offers an interesting case study for examining how women are preparing for old age and how that has changed over time given the significant changes that have been observed in women's marital and employment status over the years. This section describes women's marital and employment status as well as Japan's pension system, all of which have an important bearing on women's financial preparedness for old age.

#### **3.1 Marital status**

The marital behavior of women has gone through significant changes in recent decades in Japan, as in many other developed countries. Figure 1 shows the composition of men and women at age 50 by marital status since 1950. The figure shows that the proportion of men and women who had never married by the age of 50 increased steadily from 1.5% and 1.4% in 1950 to 28.3% and 17.8% in 2020, respectively. These figures show that a nontrivial share of men and women never marry in Japan today. Moreover, the proportion of men and women who are divorced also increased—from 1.2% and 2.2% to 6.5% and 10.6%, respectively, during the same period. This is likely to have important implications for the financial wellbeing of women, especially in old age.

**Figure 1. Composition by marital status of men and women at age 50**



Source: Population Statistics 2025  
 (available at [https://www.ipss.go.jp/syoushika/tohkei/Popular/P\\_Detail2025.asp?fname=T06-23.htm](https://www.ipss.go.jp/syoushika/tohkei/Popular/P_Detail2025.asp?fname=T06-23.htm))

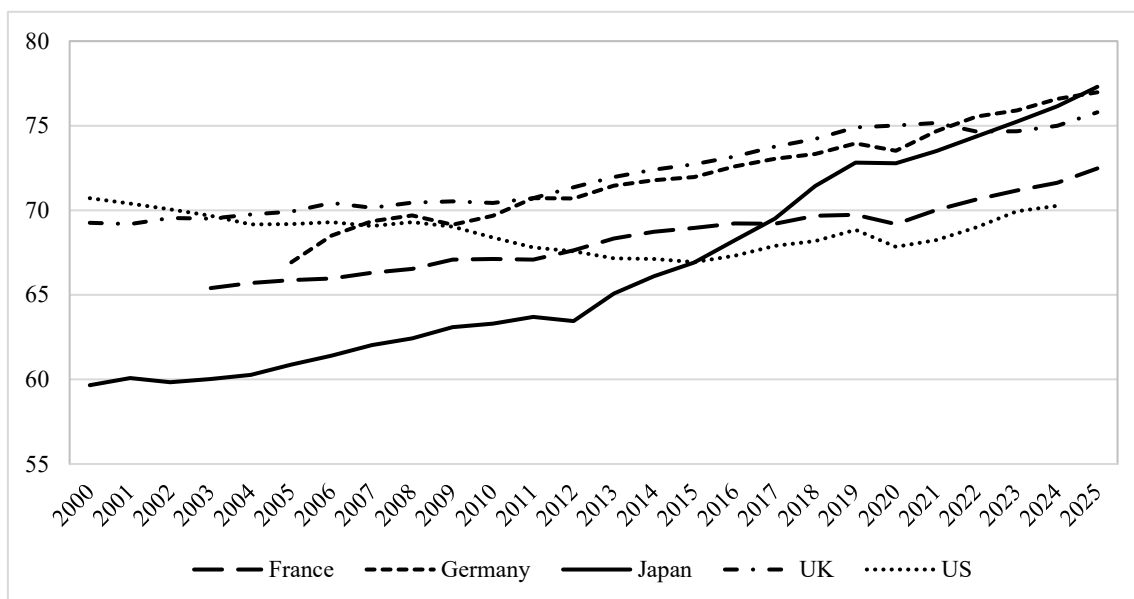
### 3.2 Employment

Japan has also seen significant changes in women’s employment status over the past few decades. Figure 2 shows the labor force participation rate of women aged 15-64 for selected countries. Japan saw a significant increase in women’s labor force participation rate from about 60% in 2000 to about 77% in 2025, reaching a level more comparable to that in other countries. Nevertheless, a relatively large share of women in Japan is in irregular employment, which tends to be low paid and insecure.<sup>5</sup> The share of women aged 15-64 in irregular employment was as high as about 49% in 2025 while this share was only about 17% among men.<sup>6</sup> The fact that the share of women who are in irregular employment increases with age suggests that the relatively large share of irregular workers among women can be explained, at least partly, by the fact that women switch to part-time work upon marriage and/or childbirth. Moreover, the beneficial provisions of the tax and social insurance systems for married couples also discourage married women from working full-time.

<sup>5</sup> Irregular employees comprise part-time workers, temporary workers, fixed-term workers, and dispatched workers from temporary agencies.

<sup>6</sup> These figures are calculated based on annual averages from the 2025 Labor Force Survey (available at <https://www.stat.go.jp/data/roudou/sokuhou/nen/dt/index.html>).

**Figure 2. Labor force participation rate of women aged 15-64 (%)**



Source: OECD Data Explorer (available at <https://data-explorer.oecd.org/>)

In the case of Japan, married couples can claim a spouse deduction or a special spouse deduction with respect to the primary earner’s national and local income taxes if the primary earner’s income and/or the spouse’s income fall below certain thresholds. Spouses are also exempted from paying social insurance premiums if their income falls below a certain threshold. Under the current system, for example, if the total annual income of a woman married to someone covered by the Employees’ Pension Insurance System<sup>7</sup> is equal to or below 1.3 million yen (about US\$8,125), she is classified as a dependent spouse, and as such, she is covered by the Basic Pension System and her husband’s Employees’ Health Insurance System, both at no cost.<sup>8</sup> Beyond this threshold, she is required to enroll in the Employees’ Pension Insurance System and Employees’ Health Insurance System of her own employer (or to start paying premiums for the Basic Pension System and to enroll in the National Health Insurance System).

These provisions of the tax and social insurance systems provide financial benefits to married couples in which one spouse does not work or works only part-time. At the same time, these provisions tend to discourage married women from working more than a certain number of hours, and as a result, they have been the subject of public debate and

<sup>7</sup> See Subsection 3.3 for a description of the Japanese pension system.

<sup>8</sup> If her monthly basic wage is equal to or more than 88,000 yen and she meets the other conditions described in Subsection 3.3, she is required to enroll in the Employees’ Pension Insurance and Employees’ Health Insurance Systems even if her total annual income does not exceed 1.3 million yen.

scrutiny over the years.

Women in Japan also face a relatively large gender wage gap. This gap, which is defined as the difference between male and female median earnings relative to male median earnings based on the gross earnings of full-time wage and salaried workers, was found to be about 21% for Japan in 2024, which is significantly higher than the OECD average of about 10% and is the second largest after South Korea.<sup>9</sup>

In sum, while women's labor market participation rate has been rising over the past few decades in Japan, their labor supply remains relatively limited as many of them work part-time and they also continue to be disadvantaged in the labor market in terms of working conditions and wage levels. This is likely to have an important bearing on their wealth accumulation capacity.

### **3.3 Pension system**

Japanese public pension system consists mainly of the Basic Pension System (National Pension) and the Employees' Pension Insurance System. All registered residents of Japan aged 20-59 must be covered by the Basic Pension System and its monthly contribution is fixed. Those who are wage and salaried workers are also enrolled in the Employees' Pension Insurance System, and under this system, the employer and the employee each contribute one half of the total amount and the amount of the total contribution depends on the employee's salary. In the past, only regular workers were covered by occupation-based social insurance (both pension and health insurance), but its coverage has been gradually expanding to irregular workers since 2016. Today, a person is eligible for occupation-based social insurance if he/she works for 20 hours per week or more, his/her basic monthly wage is equal to or more than 88,000 yen (about US\$550), he/she plans to work for more than 2 months, he/she is not a student, and the company he/she works for has more than 50 employees.

Given women's relatively weak labor market attachment and low wages as well as the limited coverage of the Employees' Pension Insurance system until recently, it is not surprising that women receive less pension benefits than men. As noted earlier, the gender gap in pensions, calculated as the difference between the mean retirement income of men

---

<sup>9</sup> The figures for the gender wage gap come from OECD (available at <https://www.oecd.org/en/data/indicators/gender-wage-gap.html>).

and women divided by the mean retirement income of men among pension beneficiaries aged 65 and above, is found to be about 47% for Japan (OECD, 2021). It is significantly greater than the OECD average of about 26% and is by far the largest among the OECD member countries for which data were available. These figures are based on the latest available data and the figure for Japan is based on data for 2013. Since women's labor market participation has been increasing and the coverage of the Employees' Pension Insurance System has been expanding in recent decades, the gender pension gap has presumably narrowed since 2013. Despite this positive trend, according to the official outlook for public pension benefits, the gender pension gap is still expected to be about 30% in 2039 when those who were born in 1974 reach the age of 65.<sup>10</sup>

## 4. Data and estimation methods

### 4.1 Data

The data used for the empirical analysis in this paper are taken from the Japanese Panel Survey of Consumers (JPSC), which was conducted annually by the Institute for Research on Household Economics from 1993 until 2016 and by the Panel Data Research Center at Keio University from 2017 until 2021. One of the unique features of this survey is that it focused on young women, both unmarried and married, and traced the same individuals yearly. The respondents of the JPSC were therefore women only although, if they were married (or once they got married), information on their husbands was also collected in every wave. The initial sample size at the start of the survey in 1993 was 1,500 women aged 24–34. Subsequently, the survey added 500 women aged 24–27 in 1997, 836 women aged 24–29 in 2003, 636 women aged 24–28 in 2008, and 648 women aged 24–28 in 2013. Each time, two-stage stratified random sampling was used to ensure that the sample was nationally representative. The relatively high response rate (e.g., approximately 96% in the case of the 2021 wave) helped ensure the representativeness of the sample for the age group in question.

Another unique feature of the JPSC is that it asked the respondent about what motives she was saving for (in the case of a married respondent, she was asked about what motives she and her husband were saving for). If the respondent replied that she was saving for a

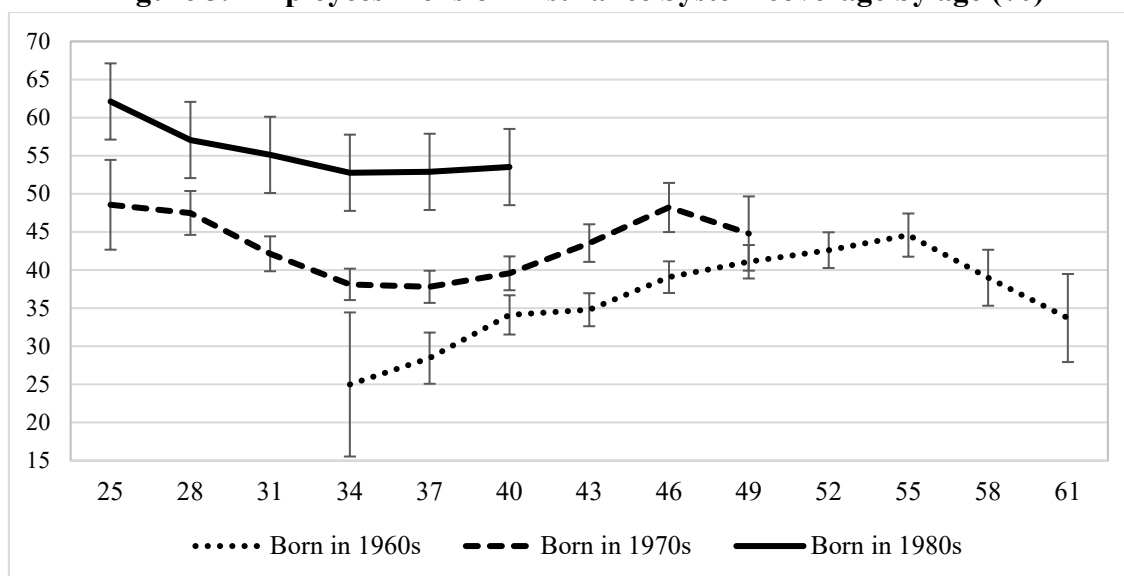
---

<sup>10</sup> Ministry of Health, Labour and Welfare (2024) *Financial Outlook for Public Pensions (Financial Verification)* (available at <https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/nenkin/nenkin/zaisei-kensyo/index.html>).

particular motive, she was also asked how much she aimed to save for that purpose. One of the saving motives listed in the questionnaire was the old-age saving motive. By exploiting such information, this paper examines how women are preparing themselves for old age. Given that the amount of saving indicates the target amount rather than the actual amount, information on which is unfortunately not available in the survey, it is likely to reflect the respondent's awareness of the need for, or attitude toward, old age preparation rather than her actual saving behavior. Nevertheless, it is still an important piece of information that will help us understand how women are preparing for old age.

Because there was a change in the way the saving motive-related questions were framed in the 2001 wave, I use data from the 2001-2021 waves for the empirical analysis. Note that the data used for the present analysis are unbalanced panel data. The estimation sample comprises 3,450 respondents with 38,233 individual-year observations after removing observations with missing information.

**Figure 3. Employees' Pension Insurance System coverage by age (%)**



Notes: The bars indicate 95% confidence intervals. Given that the way the question on pensions was phrased changed in the 2004 wave, the figure is drawn based on data from the 2004 wave and onwards only. For this reason, the confidence interval is relatively wide for the average of the 33-35 age group born in the 1960s due to the small sample size. The cohort of those who were born in the 1960s includes those who were born in 1959.

Source: Calculations based on data from the JPSC.

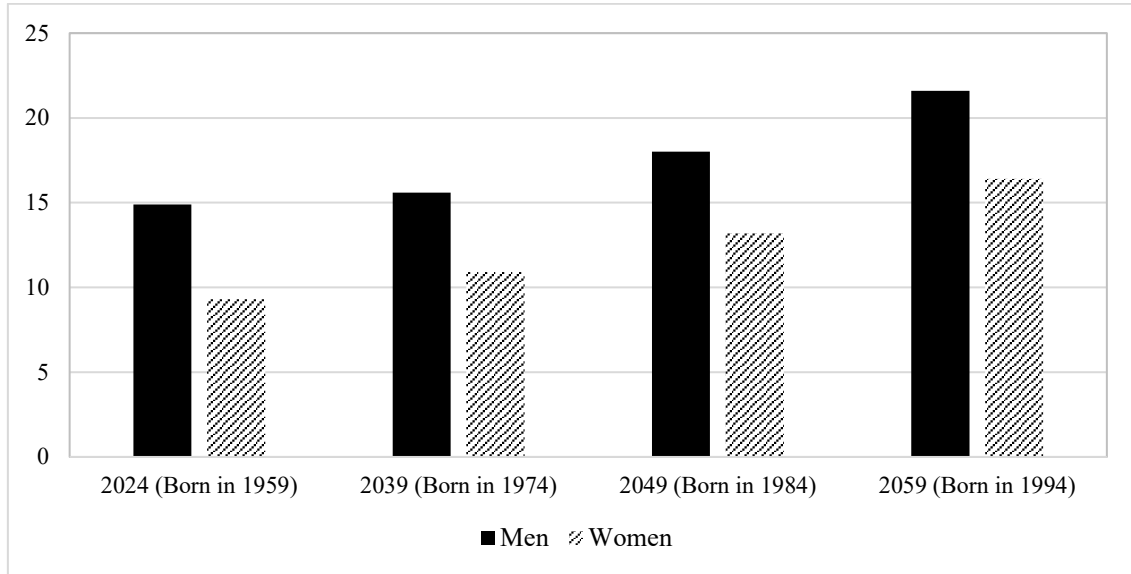
Before analyzing how women are preparing for old age through a regression analysis, it is worth looking at what proportion of women is covered by the Employees' Pension Insurance System in Japan given that such information is available in the JPSC data.

Figure 3 shows the average percentage of women who are covered by the Employees' Pension Insurance System for every three-year age group (e.g., the figure for 25 indicates the average percentage for women aged 24-26). Given that there have been significant changes in women's marital and employment status as well as in the coverage of occupation-based social insurance, as described in Section 3, it is worth looking at trends in the coverage ratio by age separately for each cohort.

The figure shows that the proportion of women who are covered by the Employees' Pension Insurance System declines when women are in their mid-30s for all three cohorts. Given that the coverage of the Employees' Pension Insurance System is directly linked to employment status, to regular employment more specifically, in Japan, as described in Section 3, the decline is likely to reflect the fact that women tend to leave work or switch to irregular employment to accommodate family responsibilities. However, we observe that the magnitude of the decline in the coverage rate seems to have become more moderate over time. In the case of the youngest cohort, more than half of women remained covered even in their mid-30s. This is an encouraging trend given that remaining in the Employees' Pension Insurance System allows women to receive greater pension income than when they drop out of the system.

These findings are consistent with the government's forecast of public pension finances. The Ministry of Health, Labour and Welfare issues a financial outlook for public pensions every five years. Figure 4 shows the average monthly pension income expected to be received at age 65 for men and women, respectively, based on the latest forecasts. A relatively large increase in pension income is expected for women due to the increase over time in their labor market participation and in the duration of their participation in pension programs, which is in line with what Figure 3 shows. The gender gap in pension income is therefore expected to decrease from about 38% in 2024 to 24% in 2059 although the gap remains relatively large in comparison with that in Western societies.

**Figure 4. Average monthly pension income per person at 65 (10,000 yen)**



Notes: The figures are for the growth-oriented economic transition and continuation scenario.

Source: Ministry of Health, Labour and Welfare (2024) *Financial Outlook for Public Pensions (Financial Verification)* (available at <https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/nenkin/nenkin/zaisei-kensyo/index.html>)

## 4.2 Estimation methods

Figures 3 and 4 show that while there have been some improvements in women's pension status over time, there remains a relatively large gender gap in pensions in Japan. It is thus important to examine women's preparedness for old age outside of pension programs. This is the main question that this paper tries to answer. Toward this end, I will conduct a regression analysis of the determinants of whether or not women are saving for old age outside of pension programs and how much they are trying to save for that purpose. More specifically, I estimate the following fixed effects regression model:

$$y_{it} = \alpha + \beta X_{it} + v_i + \lambda_t + \varepsilon_{it} \quad (1)$$

where  $y_{it}$  is the outcome variable for respondent  $i$  in year  $t$ ,  $X_{it}$  contains variables pertaining to the time-variant socioeconomic characteristics of the respondent,  $v_i$  and  $\lambda_t$  are individual and time fixed effects, respectively, and  $\varepsilon_{it}$  is an error term. In the present analysis, I use two different outcome variables for  $y_{it}$ . The first is a binary variable that equals one if respondent  $i$  is saving for old age in year  $t$  and zero otherwise, and I estimate this model as a linear probability model. The second is the respondent's target amount of saving for old age. In the case of unmarried respondents, this variable indicates how much the respondent aims to save for old age. In the case of married respondents, the saving

motive-related questions are designed in such a way that the answers reflect the joint decision of the respondent and her husband. Hence, in the case of married respondents, I express this variable as an equivalized target amount by dividing the target amount of saving for old age by the square root of two (i.e., the respondent and her husband).<sup>11</sup> Furthermore, given that, by construction, this variable is truncated at 0, I also estimate a Tobit model as a robustness check.<sup>12</sup> Note that this second outcome variable indicates the target amount, not the actual amount of saving, and I interpret it as a measure of the respondent's financial preparedness for old age rather than her actual saving behavior per se, as explained earlier.

Table 1 summarizes the dependent and explanatory variables included in the estimation model. It shows that, on average, about 48% of respondents are saving for old age. The target amount of saving (equivalized in the case of married women) for this purpose is about 5.0 million yen (about US\$31,250). The corresponding figure for married women is about 5.5 million yen (about US\$34,375) while that for unmarried women is about 4.0 million yen (about US\$25,000).

Figure 5 shows that the proportion of those who are saving for old age increases with age. It shows that once people reach their 50s, most of them are saving for old age. Figure 5 also shows some interesting differences among cohorts. The youngest cohort seems to start preparing for old age at an earlier age than older cohorts do. On the other hand, the middle cohort seems to be preparing less for old age in comparison to other cohorts although differences relative to the oldest cohort are not statistically significant. This might be explained, at least partly, by the fact that this cohort falls in the Employment Ice Age Generation, which struggled to find a regular (full-time) job as their first job after graduation from university because of the collapse of the Bubble Economy in Japan.

---

<sup>11</sup> As a robustness check, I also tried using alternative normalization methods, such as dividing the target amount by two and not dividing it at all. The regression results show that the estimates are robust to the normalization method (see Table A1 in the Appendix).

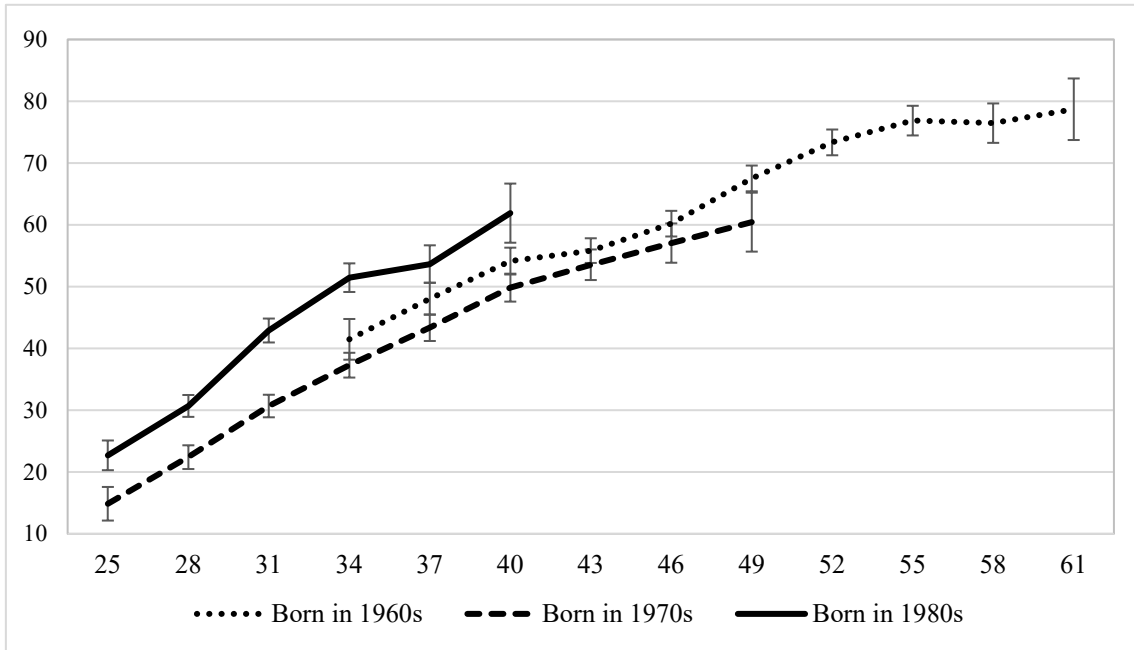
<sup>12</sup> It would have been ideal to estimate a Heckman selection model, but I could not find appropriate variables that meet the exclusion restriction of the model.

**Table 1. Summary statistics**

	Mean	SD	Min.	Max.
Saving for old age	0.48		0	1
Target amount of saving for old age (IHS-transformed)	3.40	3.62	0	11.17
Untransformed value (10,000 yen)	502.08	1,094.13	0	35,355.34
Age	38.41	8.48	24	62
Age squared/100	15.47	6.89	5.76	38.44
Marital status				
Never married	0.24		0	1
Married	0.67		0	1
Divorced	0.07		0	1
Widowed	0.01		0	1
Number of children	1.32	1.16	0	7
Residing with parents/parents-in-law	0.27		0	1
Employment				
Not in labor force	0.27		0	1
Regular worker	0.31		0	1
Irregular worker	0.35		0	1
Self-employed (incl. employees in family business)	0.06		0	1
Annual household income (IHS-transformed)	6.51	1.02	0	9.44
Untransformed value (10,000 yen)	431.25	262.45	0	6,303.27
Homeownership	0.66		0	1
Living in a major city	0.29		0	1
No. of observations		38,233		
No. of individuals		3,450		

Notes: IHS = inverse hyperbolic sine. Annual household income refers to the respondent's annual income in the case of unmarried respondents and equivalized annual income (which is calculated as the sum of the respondent's and her husband's annual income divided by the square root of two) in the case of married respondents. The target amount of saving for old age is also equivalized in the case of married respondents. Source: Calculations based on data from the JPSC.

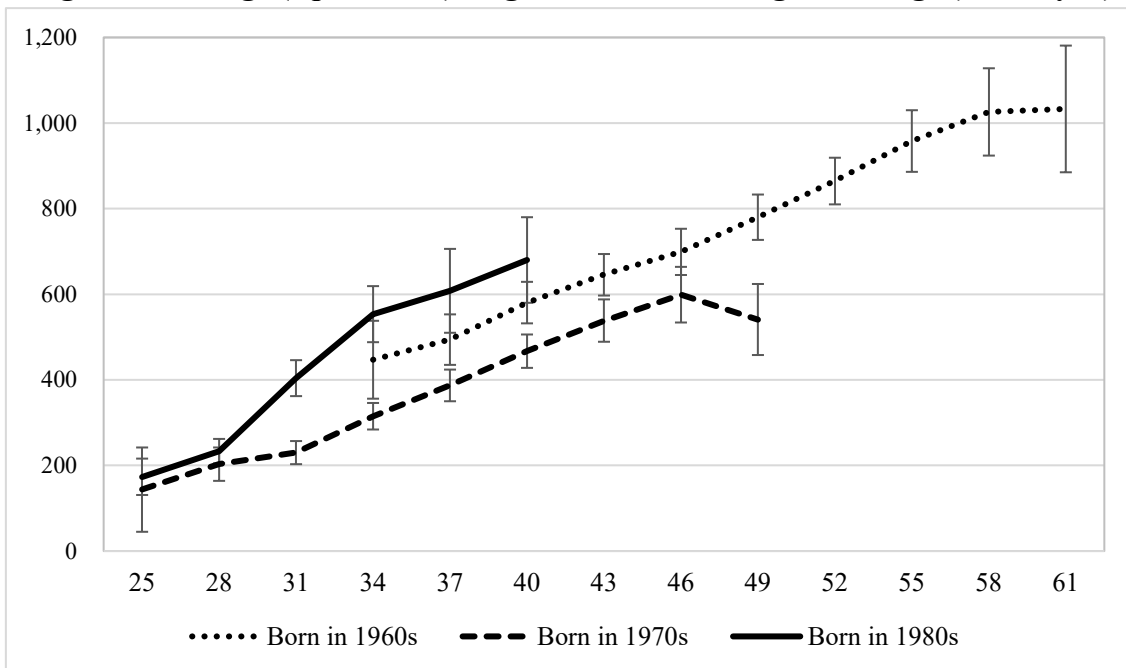
**Figure 5. The share of respondents who are saving for old age (%)**



Notes: The bars indicate 95% confidence intervals. The cohort of those who were born in the 1960s includes those who were born in 1959.

Source: Calculations based on data from the JPSC.

**Figure 6. Average (equivalized) target amount of saving for old age (10,000 yen)**



Notes: The bars indicate 95% confidence intervals. The cohort of those who were born in the 1960s includes those who were born in 1959. The target amount of saving for old age is equivalized in the case of married respondents.

Source: Calculations based on data from the JPSC.

We observe a similar pattern for the target amount of saving for old age. Figure 6 shows that the youngest cohort tries to prepare for old age to a greater extent than older cohorts (although the difference between the youngest and oldest cohorts is not statistically significant) and raises concerns about the middle cohort's preparedness for old age although the drop in the amount from 46 to 49 years old for this cohort might be due to the relatively small sample size. We find that the youngest cohort tends to start saving for old age earlier even though a greater proportion of the youngest cohort is covered by the Employees' Pension Insurance System than older cohorts (see Figure 3). This seems to reflect the fact that private saving functions as a supplement to public pensions rather than as a direct substitute for them in Japan.

In the case of Japan, the public pension system is mandatory for all residents and provides basic income security in old age whereas private saving helps achieve a higher standard of living in old age. Indeed, according to the report by the Working Group of the Financial System Council of the Financial Services Agency, an average elderly couple would need 20 million yen (about US\$125,000) in addition to their public pensions to finance a 30-year post-retirement life,<sup>13</sup> as noted earlier. The government's recent initiatives to encourage private saving for old age, such as the Nippon Individual Savings Account (NISA), New NISA, and the Individual Defined Contribution Plan (iDeCo), may explain, at least partly, why the youngest cohort tends to start saving for old age earlier than older cohorts. Note also that it used to be customary for companies to pay lump-sum retirement payments in Japan, but these retirement benefit systems have been undergoing a major transformation in recent years against the backdrop of, among other things, prolonged low interest rates, changes in corporate financial conditions, and the diversification of work styles. As a result, companies are encouraging employees to make use of defined contribution plans, such as iDeCo, to make up for the decline in lump-sum retirement payments. Such a trend may also explain the fact that the youngest cohort tends to start preparing for old age sooner than older cohorts.

The main explanatory variables of interest in the present analysis are the respondent's marital and employment status. I include a variable that indicates whether the respondent is never married, married, divorced, or widowed. Marriage is generally thought to help save more due to such factors as efficiency gains from the division of labor, economies of scale in consumption, resource pooling, and a more future-oriented mindset.<sup>14</sup> On the

---

<sup>13</sup> Financial Services Agency ([https://www.fsa.go.jp/singi/singi\\_kinyu/tosin/20190603.html](https://www.fsa.go.jp/singi/singi_kinyu/tosin/20190603.html))

<sup>14</sup> See Niimi (2022) for a discussion of how wealth accumulation is related to marriage.

other hand, being unmarried may encourage women to better prepare for old age as they do not have spouses or children to rely on. How marital status affects one's saving behavior for old age is therefore an empirical question.

As for employment status, I include a variable that indicates whether the respondent is out of labor force, a regular worker, an irregular worker, or self-employed (including being an employee in a family business). Given that regular employment tends to be more secure and pays higher wages, being in regular employment helps women save more for old age than being out of labor force or in irregular employment. On the other hand, if the respondent is in regular employment, she is likely to be covered by the Employees' Pension Insurance System in addition to the Basic Pension System. As a result, she may feel less need to save privately for old age than those who are in irregular employment or those who are self-employed. It is therefore not clear a priori what will be the direction of the impact of employment status on one's saving behavior.<sup>15</sup>

As for other explanatory variables, I include in the estimation model the respondent's age, age squared, the number of children, and a variable for residing with parents/parents-in-law. The coresiding variable equals one only if the respondent resides with her parents/parents-in-law and shares living expenses with them. I also control for income: in the case of unmarried respondents, I use their personal income, and for married respondents, I use the sum of their personal income and that of their husbands and adjust it for economies of scale in consumption by dividing it by the square root of two, as I do for the target amount of saving for old age. To correct for skewness, the target amount of saving and income variables are transformed using the inverse hyperbolic sine (IHS) function, which allows us to retain zero values, unlike in the case of a logarithmic transformation.<sup>16</sup> These variables are expressed in 2020 prices. Finally, I also include year dummies, regional dummies, and a dummy variable for residing in a major city.

---

<sup>15</sup> Note that about 24% and 55% of respondents changed their marital and employment status, respectively, during the 2001-2021 period. It is possible that some women changed their employment status upon changes in their marital status, which may cause multicollinearity between the marital and employment variables. However, both marital and employment status changed in the same year only in about 5% of cases in which either marital or employment status changed.

<sup>16</sup> The IHS-transformed variable can be calculated as  $\tilde{y} = \sin^{-1}(y) = \ln(y + \sqrt{y^2 + 1})$ . The estimated coefficients can be interpreted as being based on a logarithmic transformation except for very small values. See Bellemare and Wichman (2020) for a detailed discussion of the interpretation of the results when using IHS-transformed variables. It should be noted that while the IHS transformation is a widely used way of addressing issues such as skewness when variables contain zero and negative values, one drawback of this transformation is that estimates based on IHS-transformed variables are sensitive to the unit of measurement (Aihounton and Henningsen 2021). To

One of the issues that could arise when estimating the relationship between marital and employment status and old-age saving behavior is the non-random sorting of individuals into marriage or employment. While estimating a fixed effects regression model eliminates biases due to time-invariant unobservable characteristics, the estimates are still potentially subject to biases due to time-variant unobservable characteristics. Unfortunately, there are no appropriate variables that can be used as instruments for the marital and employment status-related variables, and I therefore treat these variables as exogenous. This essentially limits the analysis to at best identifying associations between marital and employment status and old-age saving behavior, and I cannot infer causality from the present analysis. Even so, this paper still undertakes the important task of uncovering how women prepare for old age, which has direct implications for their financial wellbeing in retirement.

Finally, given the interesting differences observed in old-age saving behavior across cohorts, as shown in Figures 5 and 6, it would have been ideal to conduct a regression analysis separately for each cohort. However, given the relatively small sample size and limited variation within cohorts, I lose statistical significance, particularly for the coefficients on the employment-related variables if I do so (see Tables A2 and A3 in the Appendix). I therefore conduct the regression analysis for the full sample in the present analysis and leave a rigorous analysis of the differences in the determinants of women's preparedness for old age across cohorts as an important agenda for future research.

## **5. Empirical results**

Table 2 reports the main regression results. The first two columns show the results of a linear probability model with fixed effects in which the dependent variable is a variable that indicates whether or not the respondent is saving for old age. The remaining two columns show the results of a fixed effects model in which the dependent variable is the target amount of saving for old age. Note that the Hausman test results indicate that a fixed effects model is the preferred model in both cases.

---

address this issue, Aihounton and Henningsen (2021) suggest using the unit of measurement that gives the best fit of the model. Among the cases in which the target amount of saving for old age and annual household income are expressed in different units (yen, tens of yen, hundreds of yen, thousands of yen, and tens of thousands of yen), I selected those expressed in tens of thousands of yen as they yielded the highest  $R^2$ . Note though that the sign and statistical significance of the estimated coefficients remain the same whichever unit I used.

**Table 2. Main regression results**

	Saving for old age		Target amount of saving for old age	
	Coefficient	S. E.	Coefficient	S. E.
Age	0.229***	0.056	1.945***	0.223
Age squared/100	-0.022***	0.005	-0.139***	0.037
Marital status (Married)				
Never married	-0.178***	0.018	-1.429***	0.135
Divorced	-0.086***	0.022	-0.710***	0.153
Widowed	-0.173***	0.064	-1.155**	0.511
Number of children	-0.013*	0.007	-0.104*	0.053
Residing with parents/parents-in-law	0.003	0.012	0.036	0.087
Employment (Not in labor force)				
Regular worker	0.002	0.012	0.064	0.086
Irregular worker	-0.021**	0.009	-0.155**	0.062
Self-employed	0.036*	0.020	0.295**	0.147
Annual household income	0.013***	0.004	0.110***	0.030
Homeownership	0.041***	0.011	0.329***	0.080
Living in a major city	0.028	0.018	0.243*	0.130
Constant	-5.949***	1.582	-51.550***	6.249
Within R <sup>2</sup>	0.073		0.088	
No. of observations	38,233			
No. of individuals	3,450			

Notes: \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. Regional and year dummies are included in both regressions. Standard errors are robust standard errors clustered at the individual level.

Source: Estimation based on data from the JPSC.

The table shows that marital status is one of the key determinants of saving behavior. In comparison to respondents who are married, a respondent who is never married, divorced, or widowed is less likely to be saving for old age. This raises concerns about the financial wellbeing of unmarried women in old age given the significant gender gap in pensions in Japan. As for employment status, the results show that if the respondent is in irregular employment, she is less likely to be saving for old age in comparison to those who are out of the labor force. In the case of married couples in Japan, the wife tends to return to work as an irregular worker after their children become less of a burden out of necessity rather than to pursue her own career if she previously left regular employment. As a result, regardless of the respondent's marital status, being in irregular employment seems to imply that she lacks the financial means to save for old age. The positive coefficients on annual household income and homeownership also suggest that better-off women are more likely to be preparing for old age than women with less financial resources. As for

the impact of being self-employed, the positive coefficient suggests that self-employed women might be consciously saving more for old age because they are not covered by the Employees' Pension Insurance System in Japan. Finally, having children seems to prevent women from preparing for old age. This may not be surprising given that the cost of raising children is likely to compete with the need to save for old age as resources are limited. On the other hand, women with children may feel less need to save as they have the option of seeking support from their children in old age.

**Table 3. Robustness check**

	Tobit model	
	Average marginal effects	S. E.
Age	0.221***	0.018
Age squared/100	-0.155***	0.018
Marital status		
(Married)		
Never married	-0.996***	0.062
Divorced	-0.679***	0.074
Widowed	-0.812***	0.196
Number of children	-0.198***	0.024
Residing with parents/parents-in-law	0.009	0.048
Employment		
(Not in labor force)		
Regular worker	0.108**	0.049
Irregular worker	-0.145***	0.037
Self-employed	0.284***	0.079
Annual household income	0.128***	0.018
Homeownership	0.278***	0.040
Living in a major city	0.197***	0.053
Education		
(High school)		
Junior college	0.287***	0.088
University +	0.643***	0.088
Cohorts		
(Born in 1960s)		
Born in 1970s	-0.367**	0.146
Born in 1980s	0.153	0.246
No. of observations	38,233	
No. of individuals	3,450	

Notes: \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. Regional and year dummies are included in the regression.

Source: Estimation based on data from the JPSC.

The results for the determinants of the target amount of saving for old age are similar to the results for the determinants of whether or not the respondent is saving for old age, as shown in Table 2. However, it should be noted that this dependent variable indicates the target amount, rather than the actual amount, of saving for old age. The estimation results

should therefore be interpreted as reflecting differences in financial preparedness for old age among respondents rather than differences in actual saving behavior.

As noted earlier, I estimate a Tobit model as a robustness check because one of the dependent variables (i.e., the target amount of saving for old age) is truncated at 0. Given that it is not possible to estimate a Tobit model with fixed effects, I include in the estimation model variables for the respondent's education and cohort dummy variables. Table 3 reports average marginal effects from a random-effects Tobit model, accounting for left-censoring at zero. As the table shows, the results remain broadly similar to those reported in Table 2 even when we take into account the censorship of the dependent variable. The table also shows that more highly educated women are better prepared for old age, which could be interpreted as a sign of the importance of financial literacy for old-age saving. In addition, the results confirm the earlier observation that those who were born in the 1970s appear to be less prepared for old age than other cohorts.

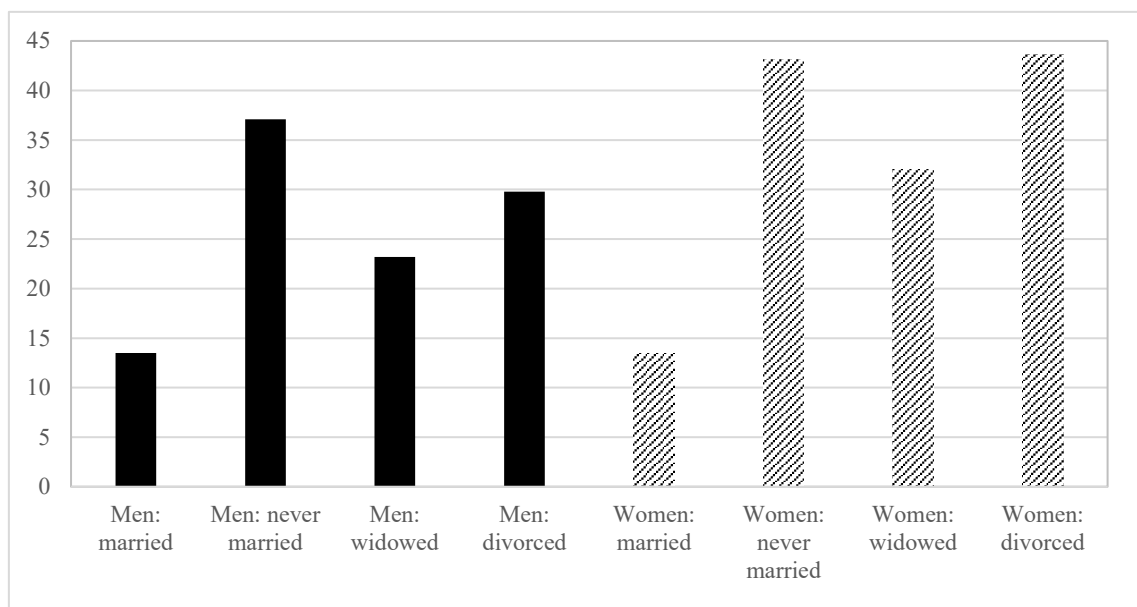
## **6. Discussion and conclusion**

This paper examined how women are preparing themselves for old age in the case of Japan. Reflecting women's enhanced labor market performance over time, we observed a steady increase in the coverage of the Employees' Pension Insurance System among women, which essentially provides additional pension income beyond the basic pension of the Basic Pension System upon retirement. Nevertheless, the gender gap in pensions in Japan remains relatively large in comparison to that in other OECD member countries. This underscores the need for women to do additional saving for old age outside of pension programs in Japan.

Using data from the Japanese Panel Survey of Consumers (JPSC), the present paper conducted a regression analysis of the determinants of whether or not women are saving for old age and how much they are trying to save for that purpose. I found that, in comparison to married women, unmarried (i.e., never married, divorced, or widowed) women are less likely to be saving for old age. The regression results also suggest that women in irregular employment are less likely to be saving for old age and that women with greater financial resources are in a better position in terms of preparation for old age. These regression results raise serious concerns about the possible risk of old-age poverty among unmarried women, particularly those who have worked mainly as irregular workers, if at all, as they are less likely to be covered by the Employees' Pension

Insurance System.

**Figure 7. Relative poverty rate by gender and marital status among those aged 65 and above (%)**



Source: The figure is drawn using data taken from Abe (2024) *Sotaihinkonritsu no Doko (2022 Chosa Update) (Trends in Relative Poverty Rates (Update on the 2022 Survey))* (in Japanese), JSPS 22H05098, <https://www.hinkonstat.net/>.

Indeed, old-age poverty among unmarried women is a serious issue in Japan. The poverty rate for those aged 65 and above in 2021 is estimated to be 20.0%, which is higher than that for all ages (15.4%). What is more disturbing is the gender gap in the poverty rate among the elderly (16.6% for men versus 22.8% for women), even though the gap among the working-age group is relatively small (12.2% for men versus 13.1% for women).<sup>17</sup> Such trends essentially reflect the fact that women receive relatively low pension income in Japan (see Figure 4). Figure 7 shows that the significant gender difference in the poverty rate is driven mainly by the relatively high poverty rate for unmarried women, particularly those who are divorced, in comparison to the rate for their male counterparts. Given that the regression results obtained in this paper indicate that unmarried women are less likely to be saving for old age, they do not seem to be building sufficient wealth to compensate for their low pension income and are therefore exposed to a greater risk of falling into poverty in old age. The regression results as well as the data on poverty rates

<sup>17</sup> The poverty rates are based on data from the 2022 Comprehensive Survey of Living Conditions, obtained from e-Stat, the portal site for official statistics of Japan (available at <https://www.e-stat.go.jp/>).

in Figure 7 also suggest that, while married women are in a better position than unmarried women in terms of their preparedness for old age, they are still in a vulnerable position as they could easily fall into poverty if they get divorced or widowed.

The present analysis is not without caveats. As the JPSC data do not contain information on pension wealth, it was not possible to assess how women are preparing for old age in terms of pension wealth. Moreover, while the JPSC data include information on whether or not the respondent is saving for old age, they include only information on the target amount of saving for old age rather than on the actual amount of saving for that purpose. This limits the analysis to examining the respondent's awareness of the need for, or attitudes toward, old age preparation rather than her actual saving behavior. However, I should note that it would be challenging to obtain information on the amount of saving for old age or for other motives given that saving is fungible and the individual does not need to decide in advance what the purpose of his/her saving is. Finally, the small sample size and the limited variation within cohorts did not allow me to conduct a regression analysis separately for each cohort in a rigorous manner, but it would be interesting to do so in the future to see whether there are any differences across cohorts in the determinants of women's financial preparedness for old age.

Despite these limitations, the findings of this paper have a number of important policy implications. First, given the observed low coverage rate of the Employees' Pension Insurance System among women, it is important to broaden the coverage of this system to prevent women from falling into poverty in old age. The recent extension of the coverage of the Employees' Pension Insurance System to those in irregular employment is a step in the right direction, but more efforts need to be made. In addition, adopting measures to help women maintain regular employment throughout their working lives and removing the disincentives to work full-time created by the current tax and social insurance systems are equally important for ensuring that women remain covered by the Employees' Pension Insurance System without too many disruptions.

Second, enabling women to maintain regular employment will not only help them remain covered by the Employees' Pension Insurance System and thus obtain higher pension income upon retirement but will also enable them to save more for old age outside of pension programs. However, at the same time, it might be equally important to raise the level of women's financial literacy as it is found to be relatively low in the case of Japan (Sekita, 2011). It is encouraging to find that the youngest cohort seems to be better

prepared for old age than older cohorts. On the other hand, women in the Employment Ice Age Generation may need particular attention as they might be more financially vulnerable than those in other cohorts.

### **Acknowledgments**

I am grateful to three anonymous referees, Long Gian, Charles Yuji Horioka, Colin McKenzie, Midori Wakabayashi, and other participants of the International Association for Research in Income and Wealth (IARIW)-World Bank Group-the VNU University of Economics and Business Conference held in October 2025 and the 2025 Family Economics Workshop held at Tokyo Metropolitan University in March 2025 for their valuable comments. I also thank the Panel Data Research Center at Keio University for permitting me to use data from the Japanese Panel Survey of Consumers. This work was financially supported by the Japan Society for the Promotion of Science KAKENHI (Grants-in-Aid for Scientific Research) grants 23K25528 and 23K25534.

### **References**

- Aihounton, G. B. D. and A. Henningsen (2021) "Units of Measurement and the Inverse Hyperbolic Sine Transformation," *Econometrics Journal*, 24(2), pp. 334-351.
- Angelici, M., D. Del Boca, N. Oggero, P. Profeta, M. C. Rossi, and C. Villosio (2022) "Pension Information and Women's Awareness," *Journal of the Economics of Ageing*, 23, 100396.
- Austen, S. and A. Mavisakalyan (2018) "Gender Gaps in Long-term Earnings and Retirement Wealth: The Effects of Education and Parenthood," *Journal of Industrial Relations*, 60(4), 492-516.
- Bellemare, M. F. and C. J. Wichman (2020) "Elasticities and the Inverse Hyperbolic Sine Transformation," *Oxford Bulletin of Economics and Statistics*, 82(1), 50-61.
- Best, R. and N. Saba (2021) "Quantifying Australia's Gender Superannuation Gap," *Economic Record*, 97(318), 410-423.
- Cordova, K., M. M. Grabka, and E. Sierminska (2022) "Pension Wealth and the Gender Wealth Gap," *European Journal of Population*, 38, 755-810.
- Croson, R. and U. Gneezy (2009) "Gender Differences in Preferences," *Journal of Economic Literature*, 47(2), 448-474.
- Demirgüç-Kunt, A., L. Klapper, and G. A. Panos (2016) "Saving for Old Age," *World Bank Policy Research Working Paper*, No. 7693, Washington, D.C.: World Bank.
- Feng, J., P. Gerrans, C. Moulang, N. Whiteside, and M. Strydom (2019) "Why Women

- Have Lower Retirement Savings: The Australian Case,” *Feminist Economics*, 25(1), 145-173.
- Fernández-López, S., M. Vivel-Búa, L. Otero-González, and P. Durán-Santomil (2015) “Exploring the Gender Effect on Europeans’ Retirement Savings,” *Feminist Economics*, 21(4), 118-150.
- Giannikos, C. I. and E. D. Korkou (2023) “Gender and Risk-Taking in the Building of U.S. Retirement Wealth,” *Atlantic Economic Journal*, 51(4), 259-274.
- Horioka, C. Y. and M. Okui (1999) “A U.S.-Japan Comparison of the Importance and Determinants of Retirement Saving,” *Economics Letters*, 65(3), 365-371.
- Horioka, C. Y. and W. Watanabe (1997) “Why Do People Save? A Micro-analysis of Motives for Household Saving in Japan,” *Economic Journal*, 107, 537-552.
- Jefferson, T. (2009) “Women and Retirement Pensions: A Research Review,” *Feminist Economics*, 15(4), 115-145.
- Kureishi, W. and M. Wakabayashi (2013) “What Motives Single Women to Save? The Case of Japan,” *Review of Economics of the Household*, 11, 681-704.
- LaRochelle-Côté, S., J. Myles, and G. Picot (2012) “Income Replacement Rates among Canadian Seniors: The Effect of Widowhood and Divorce,” *Canadian Public Policy*, 38(4), 471-495.
- Lehrer, S. F., Y. Pan, and R. Finnie (2023) “Evolution of Gender Patterns in Retirement Saving in Canada,” *Canadian Public Policy*, 49(S1), 6-31.
- Lusardi, A. and O. S. Mitchell (2008) “Planning and Financial Literacy: How Do Women Fare?” *American Economic Review*, 98(2), 413-417.
- Mandal, B. and M. Brady (2020) “The Roles of Gender and Marital Status on Risky Asset Allocation Decisions,” *Journal of Consumer Affairs*, 54(1), 177-197.
- Modigliani, F. and R. Brumberg (1954), “Utility Analysis and the Consumption Function: An Interpretation of Cross Section Data,” in Kurihara, K. K. (ed.) *Post-Keynesian Economics*, New Brunswick, NJ: Rutgers University Press.
- Neelakantan, U. and Y. Chang (2010) “Gender Differences in Wealth at Retirement,” *American Economic Review: Papers & Proceedings*, 100(2), 362-367.
- Niimi, Y. (2022) “Are Married Women Really Wealthier than Unmarried Women? Evidence from Japan,” *Demography*, 59(2), pp. 461-483.
- OECD (2021) *Towards Improved Retirement Savings Outcomes for Women*, Paris: OECD Publishing.
- Preston, A. and R. E. Write (2023) “Gender, Financial Literacy and Pension Savings,” *Economic Record*, 99(324), 58-83.
- Sekita, S. (2011) “Financial Literacy and Retirement Planning in Japan,” *Journal of*

- Pension Economics and Finance*, 10(4), 637-656.
- Tamborini, C. R. and P. Purcell (2016) “Women’s Household Preparation for Retirement at Young and Mid-Adulthood: Differences by Children and Marial Status,” *Journal of Family and Economic Issues*, 37, 226-241.
- Tinghog, G, A. Ahmed, K. Barrafreem, T. Lind, K. Skagerlund, and D. Vastfjall (2021) “Gender Differences in Financial Literacy: The Role of Stereotype Threat,” *Journal of Economic Behavior and Organization*, 192, pp. 405-416.
- Warren, T. (2006) “Moving Beyond the Gender Wealth Gap: On Gender, Class, Ethnicity, and Wealth Inequalities in the United Kingdom,” *Feminist Economics*, 12(1-2), 195-219.
- Weller, C. E. and M. E. Tolson (2020) “The Retirement Savings Penalty Borne by Women,” *Challenge*, 63(4), 201-218.
- World Economic Forum (2025) *Global Gender Gap Report 2025 Insight Report*.

## Appendix

**Table A1. Regression results based on alternative normalization methods**

	Target amount of saving for old age equivalized in the case of married respondents by dividing the amount by two		Target amount of saving for old age without equivalizing even in the case of married respondents	
	Coefficient	S. E.	Coefficient	S. E.
Age	1.884***	0.199	2.007***	0.248
Age squared/100	-0.141***	0.036	-0.137***	0.038
Marital status (Married)				
Never married	-1.301***	0.131	-1.556***	0.140
Divorced	-0.603***	0.149	-0.816***	0.158
Widowed	-0.963*	0.506	-1.347***	0.518
Number of children	-0.106**	0.051	-0.102*	0.055
Residing with parents/parents-in-law	0.035	0.085	0.037	0.089
Employment (Not in labor force)				
Regular worker	0.057	0.083	0.072	0.089
Irregular worker	-0.158***	0.060	-0.152**	0.065
Self-employed	0.280**	0.142	0.311**	0.152
Annual household income	0.110***	0.030	0.110***	0.030
Homeownership	0.306***	0.077	0.352***	0.082
Living in a major city	0.230*	0.126	0.255*	0.135
Constant	-49.903***	5.575	-53.197***	6.995
Within R <sup>2</sup>	0.082		0.089	
No. of observations	38,233			
No. of individuals	3,450			

Notes: Alternative normalization methods were also used for annual household income, namely equalizing income in the case of married respondents by dividing it by two and not equalizing it even in the case of married respondents. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. Regional and year dummies are included in both regressions. Standard errors are robust standard errors clustered at the individual level.

Source: Estimation based on data from the JPSC.

**Table A2. Regression results for saving for old age by cohort**

	Born in 1960s		Born in 1970s		Born in 1980s	
	Coefficient	S. E.	Coefficient	S. E.	Coefficient	S. E.
Age	0.029**	0.014	0.248***	0.061	-0.007	0.026
Age squared/100	-0.016	0.014	-0.055***	0.021	0.044	0.041
Marital status (Married)						
Never married	-0.135**	0.065	-0.190***	0.029	-0.151***	0.027
Divorced	-0.062	0.038	-0.102***	0.033	-0.089*	0.046
Widowed	-0.176**	0.072	-0.038	0.100	-0.849***	0.036
Number of children	-0.001	0.011	-0.034***	0.012	2.77e-04	0.014
Residing with parents/parents-in-law	0.026	0.020	0.021	0.020	-0.055**	0.023
Employment (Not in labor force)						
Regular worker	0.012	0.022	-0.009	0.018	0.005	0.024
Irregular worker	-0.012	0.015	-0.026*	0.014	-0.024	0.018
Self-employed	0.044	0.034	0.035	0.030	0.020	0.045
Annual household income	0.017**	0.007	0.010	0.008	0.012*	0.006
Homeownership	0.040*	0.023	0.058***	0.018	0.030*	0.018
Living in a major city	0.044	0.038	0.064**	0.027	-0.044	0.029
Constant	-0.495	0.307	-5.920***	1.573	0.234	0.409
Within R <sup>2</sup>	0.047		0.048		0.075	
No. of observations	14,670		14,023		9,540	
No. of individuals	1,040		1,177		1,233	

Notes: \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. Regional and year dummies are included in both regressions. Standard errors are robust standard errors clustered at the individual level.

Source: Estimation based on data from the JPSC.

**Table A3. Regression results for the target amount of saving for old age by cohort**

	Born in 1960s		Born in 1970s		Born in 1980s	
	Coefficient	S. E.	Coefficient	S. E.	Coefficient	S. E.
Age	0.190*	0.099	2.062***	0.307	-0.073	0.187
Age squared/100	-0.090	0.105	-0.344**	0.151	0.366	0.292
Marital status (Married)						
Never married	-1.046**	0.478	-1.495***	0.211	-1.276***	0.199
Divorced	-0.612**	0.262	-0.740***	0.234	-0.775**	0.319
Widowed	-1.186**	0.579	-0.242	0.697	-5.608***	0.255
Number of children	-0.021	0.083	-0.247***	0.089	8.49e-04	0.104
Residing with parents/parents-in-law	0.192	0.145	0.151	0.143	-0.350**	0.157
Employment (Not in labor force)						
Regular worker	0.080	0.153	-0.003	0.133	0.118	0.163
Irregular worker	-0.101	0.104	-0.203**	0.100	-0.144	0.122
Self-employed	0.314	0.240	0.298	0.220	0.268	0.329
Annual household income	0.135***	0.048	0.085	0.058	0.105**	0.042
Homeownership	0.317*	0.163	0.478***	0.128	0.196	0.129
Living in a major city	0.317	0.262	0.525***	0.200	-0.306	-0.205
Constant	-3.343	2.226	-50.398***	7.744	1.647	2.914
Within R <sup>2</sup>	0.050		0.045		0.088	
No. of observations	14,670		14,023		9,540	
No. of individuals	1,040		1,177		1,233	

Notes: \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. Regional and year dummies are included in both regressions. Standard errors are robust standard errors clustered at the individual level.

Source: Estimation based on data from the JPSC.