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投稿論文

Intergenerational Inequality and Fiscal Redistribution in Aging Japan*

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Abstract

This paper examines the evolution of income inequality in Japan from a generational perspective using published tabulations from two nationally representative surveys. First, the National Survey of Family Income and Expenditure (NSFIE) is used to compute Theil-index decompositions of inequality across and within age groups. Second, the Survey on the Redistribution of Income (SRI) is used to compare age-specific Gini coefficients before and after fiscal redistribution and to evaluate the redistributive effects of taxes and transfers.

The first analysis shows that income inequality has increased among working-age individuals (26–64). It also shows that this increase is accompanied by a rising share of individuals in the bottom income quintile, suggesting that an increase in the share of individuals in the lower income quintiles plays an important role. In contrast, inequality among the elderly (65+) has declined, consistent with findings that the maturation of Japan's public pension system has strengthened income equalization.

The second analysis reveals a pronounced generational imbalance in the redistributive effects of fiscal policy. Public transfers—especially pensions, health care, and long-term care bene-fits—reduce inequality among the elderly by 30–50 percent, whereas their redistributive impact on working-age individuals remains below 20 percent.

Taken together, these findings suggest that growing inequality within the working-age population deserves greater attention in future discussions of redistribution policy. As demographic aging accelerates, reassessing the intergenerational allocation of taxes and transfers may become increasingly important for achieving a more balanced and sustainable inequality-reduction strategy.

JEL Classification Codes: D31, H23, H55, J11

Keywords: Income Inequality; Redistribution; Generational Differences; Population Aging; Fiscal Policy; Japan

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世代間格差と財政再分配[***]
～高齢化が進む日本における所得不平等～

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＜要旨＞

本稿は、全国規模の代表性を持つ 2 つの統計調査を組み合わせ、日本の所得不平等の推移を世代（年齢階級）の観点から以下の２つの分析を通じて検討する。

１．全国消費実態調査を用いて、所得不平等を年齢階級間・年齢階級内に分解するタイル指数（Theil index）の分解分析を行う。

２．所得再分配調査を用いて、財政再分配の前後における年齢階級別ジニ係数を比較し、再分配効果を評価する。

１．の分析では、現役世代（26～64 歳）では所得不平等が拡大していることが確認される。さらに、所得五分位の分布をみると、現役世代では下位五分位に属する者の割合が上昇しており、不平等の拡大が単なる分散の拡大にとどまらず、低所得層の増加を伴っていることが示唆される。一方で、高齢者（65 歳以上）の不平等は低下していることが確認される。

２．の分析では、世代間の再分配効果の著しい不均衡が明らかとなる。年金、医療、介護給付を中心とする公的移転は、高齢者の不平等を 30～50%程度削減する一方、現役世代世帯に対する再分配効果は 20%未満にとどまる。

以上の結果は、日本の財政構造が高齢世代の所得平準化には極めて有効である一方、現役世代に対する再分配が限定的であることを示唆する。人口高齢化が一段と進む中で、現役世代内の不平等の拡大を踏まえ、税と移転の世代間配分のあり方について再検討することの重要性が高まっている可能性がある。

JEL Classification Codes：D31, H23, H55, J11

Keywords：所得不平等、再分配、世代間格差、人口高齢化、財政政策、日本

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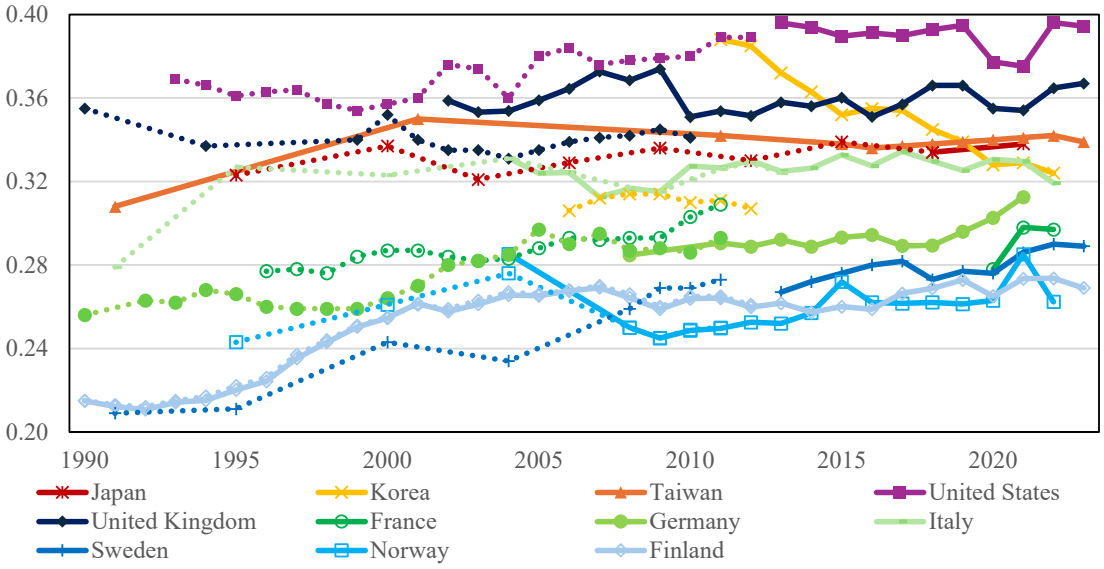
1. Introduction

Income inequality has emerged as a central policy issue across both advanced and developing economies, as documented by a wide body of recent research (Autor et al. 2008; Chetty et al. 2014; Piketty and Saez 2003). Although inequality has risen globally, the underlying drivers and distributional consequences differ markedly across regions. East Asian economies—particularly Japan, Korea, and Taiwan—are experiencing some of the fastest rates of population aging in the world. This rapid demographic shift has intensified fiscal pressures through rising social security expenditures and has heightened concerns about economic sustainability.

Figure 1. Gini Coefficient, 1990-2023



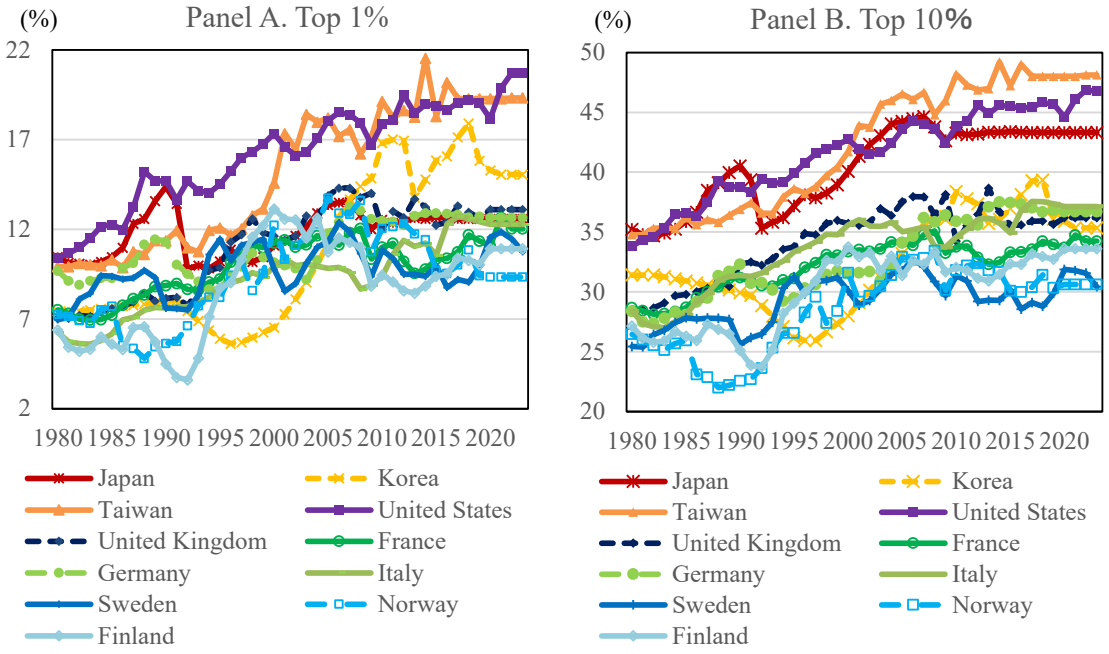
Source: OECD Income Distribution Database (https://www.oecd.org/en/data/datasets/income-and-wealth-distribution-database.html). Directorate-General of Budget, Accounting and Statistics (DGBAS), Executive Yuan, Statistical Yearbook of the Republic of China (Taiwan), 2025.

Notes: OECD series refer to the total population and are based on equivalized household disposable income (income after taxes and transfers adjusted for household size). Solid lines apply the post-2012 OECD definition; dotted lines apply the pre-2011 definition. Taiwan's Gini coefficients are taken from DGBAS (Statistical Yearbook of the Republic of China) and are based on non-equivalized household disposable income. Quintiles and Gini values are computed at the household level without equivalence-scale adjustments. Therefore, the Taiwanese series are not strictly comparable to OECD definitions, and differences in methodology may affect levels.

Figure 1 presents long-term trends in the Gini coefficient for disposable income. East Asian economies exhibit lower inequality than Anglo-Saxon countries such as the United States and the United Kingdom, but higher levels than continental Europe and the Nordic states. However, top-income series from the World Inequality Database (Figure 2) reveal a different pattern: the top 1 percent

income shares in Korea and Taiwan rival or exceed the corresponding share of the United States, and Japan's top 10 percent share is similarly elevated. The divergence between Gini coefficients and top-income shares indicates that inequality in aging East Asian economies is more complex than suggested by any single indicator. In particular, these patterns highlight the importance of examining inequality across generations, rather than relying solely on aggregate measures.

Figure 2. Top Income Shares, 1980-2023



Source: World Inequality Database (https://wid.world/).

Notes: Top income shares follow the Distributional National Accounts (DINA) methodology of the World Inequality Database. Income is allocated to "equal-split adults," meaning that total household income is divided equally among adult household members (age 20+). The series measure pre-tax national income (before taxes and transfers) and therefore differ from equivalized disposable household income used in OECD Gini coefficients.

Population aging is progressing especially rapidly in Japan, making it an ideal case to study how demographic change interacts with income distribution and fiscal policy. This study therefore investigates two central questions:

(1) How do trends in intergenerational and intragenerational inequality contribute to overall income inequality?

(2) To what extent does fiscal redistribution reduce inequality for different age groups?

Using published tabulations from nationally representative surveys, this study documents clear and policy-relevant patterns. Over the past two decades, income inequality within the elderly population

(65+) has consistently declined, while inequality within the working-age population (26–64) has widened. To shed light on the underlying mechanisms, we further examine changes in the population distribution across income quintiles. The results show that the share of individuals in the bottom quintile has increased among the working-age population, while it has declined among the elderly, suggesting that rising inequality among the working-age population reflects not only greater dispersion at the top but also an expansion of low-income population. Redistribution through public pensions and in-kind benefits—especially medical and long-term care services—reduces inequality among the elderly by roughly one half, whereas the equalizing effect for working-age individuals remains below 20 percent. These results indicate that Japan's fiscal system is highly effective in equalizing income among older cohorts but provides comparatively limited support for younger and working-age generations.

This paper makes three contributions to the literature. First, it provides, to our knowledge, one of the first integrated decompositions of Japan's income inequality into within- and between-generation components using the National Survey of Family Income and Expenditure (NSFIE) data. Second, it quantifies generation-specific redistributive effects using age-disaggregated Gini coefficients from the Survey on the Redistribution of Income (SRI), offering new evidence on how fiscal redistribution differs across age groups. Third, the analysis documents a widening gap in redistributive effectiveness between the elderly and working-age individuals, underscoring the need to reassess Japan's intergenerational tax–transfer balance amid rapid population aging.

2. Related Literature

Moriguchi and Saez (2008) analyzed the long-term evolution of income concentration in Japan using historical income tax statistics. Based on data spanning from 1886 to 2005, they documented extremely high-income concentration before World War II, followed by a dramatic equalization during the war and the immediate postwar years. Japan then experienced several decades of relative stability and equality during the high-growth period, but since the 1990s, the income share of top earners has risen again, indicating a renewed trend toward inequality.

Lise et al. (2014) conducted a comprehensive analysis of wage, income, and consumption inequality in Japan using several large-scale household datasets, including the Basic Survey on Wage Structure (BSWS), the Family Income and Expenditure Survey (FIES), and NSFIE. Their results show that while incomes increased across all income groups from the 1980s to the mid-1990s, the gains were larger for higher-income households. After the late 1990s, the incomes of lower- and middle-income groups stagnated or declined, leading to an overall rise in inequality.

Kitao and Yamada (2025) examined long-term trends in inequality in income, wealth, and consumption using microdata from the NSFIE and the National Survey of Family Income, Consumption,

and Wealth (NSFICW) from 1984 to 2019. They confirmed that Japan's Gini coefficients for both income and wealth have risen over the past four decades and demonstrated that much of this increase can be attributed to demographic changes associated with population aging. Their analysis further revealed that income inequality has declined among the elderly but has increased moderately among younger and middle-aged cohorts, suggesting that the overall rise in inequality largely reflects shifts in population composition.

Khera and Gao (2024) similarly pointed out that income inequality in Japan has continued to widen. They attribute this trend to the weak redistributive effects of taxes and social security for younger generations, as well as to a dual labor market characterized by disparities between regular and non-regular employment. The report also emphasized that Japan's redistribution policies remain heavily oriented toward the elderly, while financial support for the working-age population remains insufficient.

While previous studies have documented the long-term rise in inequality and the role of demographic aging in shaping Japan's income distribution, few have quantitatively assessed how inequality differs across generations or how redistributive policies have affected each generation differently. Therefore, this study uses NSFIE to decompose Japan's income inequality into intergenerational and intragenerational components. By applying a consistent inequality measure across age groups, it aims to identify which generations have experienced widening inequality and to evaluate how redistributive policies have mitigated—or failed to mitigate—these disparities.

3. Data and Methodology

3.1 Data

This study employs two nationally representative household datasets collected by Japan's Statistics Bureau and the Ministry of Health, Labour and Welfare (MHLW) to analyze changes in income inequality and the redistributive effects of fiscal policy across generations.

All data used in this study are obtained from publicly available aggregated tabulations released by the Statistics Bureau of Japan and MHLW, primarily through official statistical portals such as e-Stat.

Importantly, this study does not use micro-level (individual or household-level) data, nor does it rely on custom tabulations (so-called "tailor-made tabulations") provided by statistical authorities. While such data sources allow for more precise analysis, access is restricted and typically requires a formal application process.

As a result, the analysis is based entirely on published summary tables. This constraint implies that the joint distribution of income by age group and income percentile is not directly observable, which motivates the reconstruction procedure described in Section 3.3.

3.1.1 The National Survey of Family Income and Expenditure (NSFIE)

NSFIE is a nationally representative, large-scale survey conducted every five years that collects detailed information on household assets, consumption, and income. Publicly available datasets cover the years 1999, 2004, 2009, and 2014, which are used in this study. Since the survey was redesigned and renamed as the NSFICW in 2019—with major changes in its sampling design—the newer data are not directly comparable to earlier waves.

The published tables include percentile-level pre-tax and post-tax income distributions and mean household income by age group, allowing for the analysis of within- and between-generation inequality. Income per household member is used, assuming an equivalence elasticity of 1—that is, total household income is divided equally among household members without adjustment for economies of scale. These aggregated tabulations serve as the basis for calculating Theil indices and decomposing total inequality into intra- and inter-age components.

3.1.2 The Survey on the Redistribution of Income (SRI)

To evaluate the effects of redistribution policies, this study uses SRI, conducted every three years. The published results provide, by age group, Gini coefficients for both initial and redistributed income. The published Gini coefficients are based on equivalized household income with an equivalence elasticity of 0.5, meaning that household income is adjusted for economies of scale within the household.

Initial income is defined as market income, including labor earnings and private transfers (such as remittances from family members), but excluding social security benefits such as pensions. Redistributed income adds cash and in-kind social security benefits to market income and deducts taxes and social insurance contributions.

The analysis covers all available survey years from 1999 to 2022. These data allow for a direct comparison of inequality before and after fiscal redistribution, clarifying how Japan's tax and transfer system affects income inequality across different age cohorts.

3.2 Descriptive Statistics

Tables 1 and 2 summarize the time-series trends of average income from NSFIE and SRI, respectively. Although the income concepts differ across the two surveys, the higher income level in SRI largely reflects the difference in equivalence elasticity applied when converting household income into per-capita income. NSFIE assumes an elasticity of 1.0, while SRI uses 0.5, which moderates the adjustment for household size and therefore yields higher average equivalized income.

Over time, both pre-tax and post-tax incomes in NSFIE show a general decline from 1999 to 2014. A similar downward trend is observed in the SRI from 2002 to around 2014, followed by a recovery and upward trend after 2017.

Table 1. Pre- and Post-tax Average Income, 1999–2014 (NSFIE)

(Thousand yen)	1999	2004	2009	2014
Pre-tax income	2,364	2,274	2,209	2,223
Post-tax income	2,000	1,920	1,826	1,813

Source: National Survey of Family Income and Expenditure (NSFIE).

Notes: Pre-tax income corresponds to "jitsushunyū" (actual income), which includes labor earnings, business income, side-work income, property income, and social security benefits. Post-tax income is defined as actual income minus mandatory non-consumption expenditures such as taxes and social insurance contributions, representing net take-home income. All values are taken from published NSFIE tabulations and represent income per household member (equivalence elasticity = 1.0).

Table 2. Initial and Redistributed Average Income, 2002-2021 (SRI)

(Thousand yen)	2002	2005	2008	2011	2014	2017	2021
Initial income	3,283	3,050	3,017	2,821	2,790	3,051	3,124
Redistributed income	3,616	3,487	3,404	3,275	3,293	3,428	3,597

Source: Survey on the Redistribution of Income (SRI).

Notes: Initial income in the SRI corresponds to market income plus private transfers, including labor earnings, business and agricultural income, property income, home-based work income, miscellaneous income, and private transfers such as remittances, corporate pensions, and insurance payouts. Redistributed income is defined as initial income minus taxes and social insurance contributions, plus public social security benefits provided in both cash and in-kind forms (e.g., medical and long-term care services). SRI income measures are based on equivalized household income using an equivalence elasticity of 0.5.

3.3 Methodology

3.3.1 Data Reconstruction: Estimating the Age–Percentile Income Matrix

Before computing the Theil index, the published NSFIE tables provide only (i) mean income by age group (μ_a) and (ii) mean income by income percentile group (μ_d), but not their joint distribution. To enable decomposition of inequality by age group, this study reconstructs an age–percentile income matrix for each survey year using a weighted Iterative Proportional Fitting (IPF) procedure that enforces these marginal mean constraints while respecting the published cell counts.

1. Inputs

For each year, we use three published objects:

(1) age-group means μ_a, where the age classification consists of seven groups: under 18, 18–25, 26–40, 41–50, 51–64, 65–74, and 75 and above

(2) percentile group means μ_d, where the published tabulation divides the distribution into 12

percentile bins (5-percentile groups in the lower and upper tails and 10-percentile groups in the middle)

(3) the age-percentile cell counts w_{ad}, measured on a household-member basis (i.e., weights correspond to the number of individuals in each age-percentile cell.)

2. Feasibility (internal consistency) and scaling

A necessary condition for feasibility is that totals implied by row and column constraints match when weighted by cell counts:

$$\sum_a \mu_a w_a \approx \sum_d \mu_d w_d$$

In practice, small discrepancies can arise from rounding in published tables. To enforce feasibility, we rescale the percentile means by a year-specific factor:

$$\mu_d^* = \mu_d \times \frac{\sum_a \mu_a w_a}{\sum_d \mu_d w_d}$$

This adjustment is typically extremely small (on the order of 10^{-4} in relative terms) and ensures that the weighted IPF has a consistent set of constraints.

3. Algorithm (weighted IPF)

Let $y_{ad}^{(t)}$ denote the fitted mean income in cell (a, d) at iteration t. Define the weighted fitted row and column means as:

$$\bar{y}_a^{(t)} = \frac{\sum_d w_{ad} y_{ad}^{(t)}}{\sum_d w_{ad}}, \quad \bar{y}_d^{(t)} = \frac{\sum_a w_{ad} y_{ad}^{(t)}}{\sum_a w_{ad}}$$

Starting from a multiplicative baseline $y_{ad}^{(0)}$ proportional to $\mu_a \mu_d^*$, the algorithm alternates between row and column scaling:

$$y_{ad}^{(t+\frac{1}{2})} = y_{ad}^{(t)} \times \frac{\mu_a}{\bar{y}_a^{(t)}}, \quad y_{ad}^{(t+1)} = y_{ad}^{(t+\frac{1}{2})} \times \frac{\mu_d^*}{\bar{y}_d^{(t+\frac{1}{2})}}$$

This procedure preserves positivity and converges to a matrix that matches both sets of marginal means in a weighted sense.

4. Convergence criterion and diagnostics

At each iteration we compute the maximum relative deviation of fitted marginals from targets:

$$\max_a \left| \frac{\mu_a - \bar{y}_a}{\mu_a} \right|, \quad \max_d \left| \frac{\mu_d - \bar{y}_d}{\mu_d^*} \right|$$

We declare convergence when the larger of these two maxima falls below 10^{-7} (with a maximum of 2000 iterations). In our implementation, all survey years converge quickly (within 5-6 iterations), indicating stable numerical behavior.

5. Post-estimation margin checks

After convergence, we verify that the reconstructed matrix reproduces the target marginals. For NSFIE years used here (1999, 2004, 2009, 2014), the column (percentile) constraints are matched essentially up to numerical precision, and the row (age) constraints are matched with extremely small absolute errors. The maximum absolute deviation in reconstructed age-group means is 1.6×10^{-4} (income units), corresponding to a relative error below 10^{-7}. Given that the Theil index is approximately 0.2 in magnitude, this implies a change of less than 10^{-6} in the inequality measure. Hence, any residual numerical discrepancy is economically negligible for the subsequent decomposition analysis.

6. Interpretation and identifying assumption

The reconstructed matrix is a joint distribution constructed under minimal additional assumptions and consistent with the published marginals and cell counts. While the true within-cell dispersion cannot be recovered from aggregated tabulations, this reconstruction provides a disciplined way to recover the joint age-percentile structure required for Theil decomposition, with transparent convergence diagnostics and error checks.

Because the reconstructed matrix reproduces the published marginal statistics and aggregate income totals, the resulting inequality measures are firmly anchored in the official tabulations.

Sensitivity analyses further confirm numerical stability. Tightening the convergence tolerance to 10^{-10} leads the algorithm to reach the maximum iteration threshold without full convergence; however, the resulting Theil indices differ by less than 10^{-8} from the baseline specification. Hence, the decomposition results are robust to reasonable variations in numerical implementation.

3.3.2 Theil Decomposition: Measuring Within- and Between-Generation Inequality

The Theil index is an entropy-based measure of inequality that allows for a perfect additive decomposition across subgroups. It captures the loss of information that occurs when the income distribution is replaced by the mean income.

Formally, for a population with n individuals, income y_i and mean income μ, the Theil index T is defined as:

$$T = \frac{1}{n}\sum_{i=1}^{n}\frac{y_i}{\mu}\ln\frac{y_i}{\mu}$$

A larger value of T indicates a higher degree of income inequality. Unlike the Gini coefficient, the Theil index is additively decomposable, which makes it suitable for separating inequality within and between population groups—such as age cohorts in this study.

Decomposition by Age Groups

To examine the sources of inequality across generations, the overall Theil index is decomposed into within-generation and between-generation components. Let the total population be divided into A age groups. Each age group a has:

- a population share $p_a = \frac{N_a}{N_{total}}$
- an income share $s_a = \frac{Y_a}{Y_{total}}$
- an average income $\mu_a = \frac{Y_a}{N_a}$

The total Theil index can be written as$T = \sum_a s_a T_a + \sum_a s_a \ln \frac{s_a}{p_a}$

where

- $T_a = \sum_d s_{ad} \ln \frac{s_{ad}}{p_{ad}}$
  represents the within-generation inequality of age group a,
- the first term $\sum_a s_a T_a$ captures inequality within age groups, and
- the second term $\sum_a s_a \ln \frac{s_a}{p_a}$ measures inequality between age groups.
  Note that $\frac{\mu_a}{\mu} = \frac{s_a}{p_a}$, so the between-group component can equivalently be written as $\sum_a s_a \ln \frac{\mu_a}{\mu}$

This additive property of the Theil index ensures that the total inequality can be perfectly decomposed into the contributions of inequality within and between age cohorts. The decomposition allows us to quantify how much of Japan's total income inequality arises from differences within generations—such as dispersion among working-age individuals—and how much from differences between generations, reflecting disparities between the elderly and younger individuals.

3.3.3 Redistribution Effects: Measuring the Policy Impact of Taxes and Transfers

To assess the redistributive effect of Japan's fiscal system, this study compares income inequality before and after taxes and transfers using the data from SRI. It provides Gini coefficients for both initial income and redistributed income by five-year age groups.

For comparability with the previous decomposition analysis, these age groups are aggregated into three generations:

- 0-24 (young),
- 25-64 (working-age), and
- 65 and over (elderly).

For each broad age category, we calculate the simple average of the published Gini coefficients for the constituent five-year age groups.

Two indicators of redistribution are then derived:

1. **Absolute redistribution effect**

$$\Delta G = G_{inital} - G_{redist}$$

which measures the absolute reduction in inequality after redistribution

2. Relative redistribution effect

$$R = \frac{G_{initial} - G_{redist}}{G_{initial}}$$

which expresses the redistributive impact as a percentage of initial inequality.

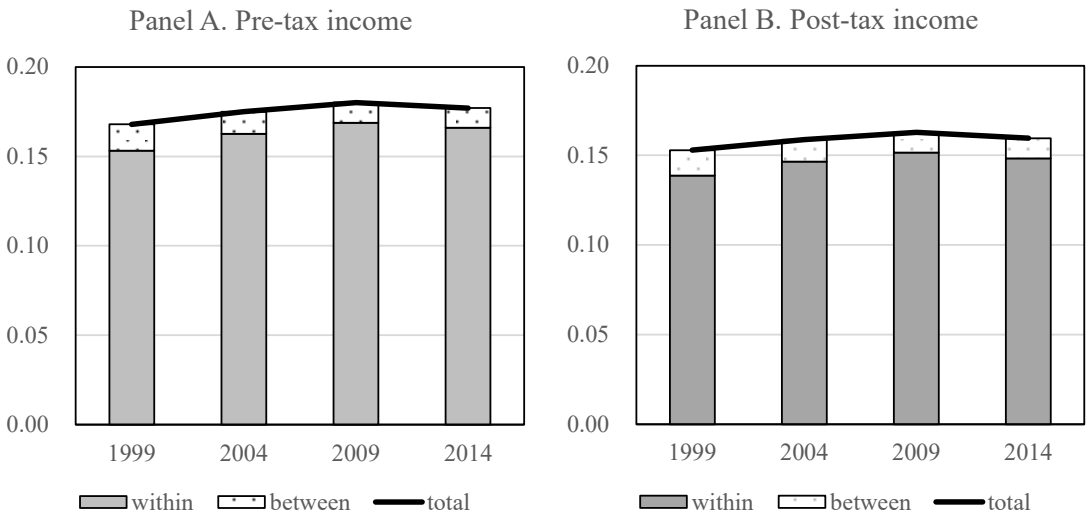
A larger value of ΔG or R indicates a stronger equalizing effect of fiscal redistribution for the respective generation. These indicators allow comparison of the redistributive intensity across age groups and over time.

4. Results

4.1 Within- and Between-Generation Inequality

Theil indices of income inequality remained roughly stable between 1999 and 2014, at around 0.175 for pre-tax income and 0.16 for post-tax income. However, the decomposition results show that the within-group component increased by about 0.01 between 1999 and 2004. On the other hand, the between-group component declined by roughly 0.004, indicating that the stability of overall inequality mainly reflects offsetting changes between within- and between-age-group disparities.

Figure 3. Decomposed Theil Index, 1999–2014



Source: Author's calculations based on the National Survey of Family Income and Expenditure (NSFIE).

Notes: Theil index is computed using income-share weights, where each age–income cell is weighted by its share of total income. Pretax income corresponds to "jitsushunyū" (actual income), which includes labor, business, property income, and social security benefits. Post-tax income is actual income minus taxes and social insurance contributions. Bars show the decomposition of the total Theil index (solid line) into within- and between-age-group components.

Table 3 Decomposed Theil Index, 1999–2014.

Year	Pre-tax			Post-tax		
	Total	Within	Between	Total	Within	Between
1999	0.168	0.153	0.015	0.153	0.139	0.014
2004	0.175	0.163	0.012	0.159	0.146	0.012
2009	0.180	0.169	0.011	0.163	0.152	0.011
2014	0.177	0.166	0.011	0.160	0.148	0.011

Source: Author's calculations based on the National Survey of Family Income and Expenditure (NSFIE).

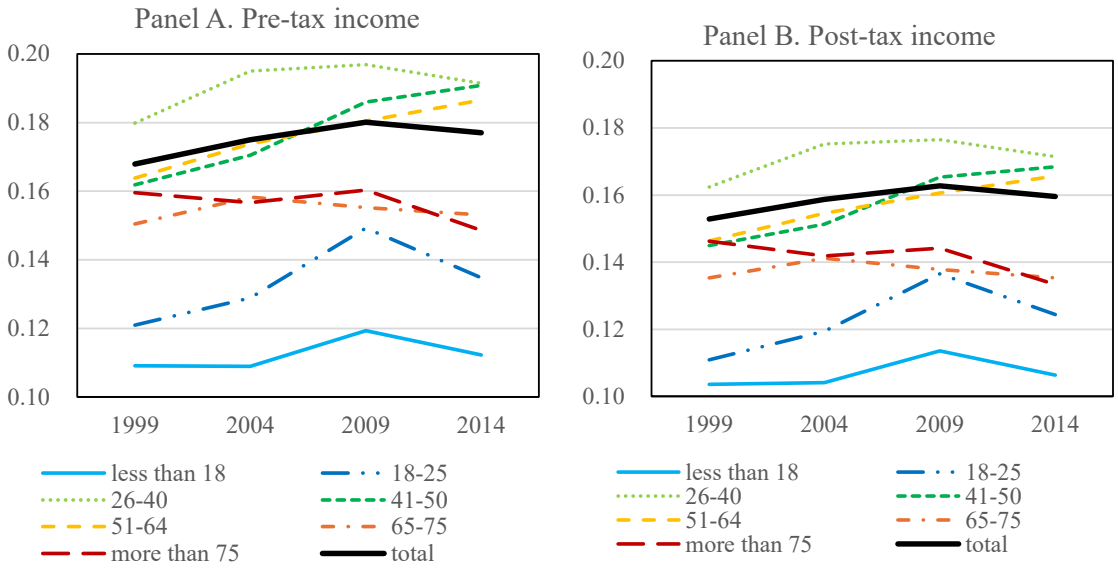
Notes: Theil index is computed using income-share weights, where each age–income cell is weighted by its share of total income. Pretax income corresponds to "jitsushunyū" (actual income), which includes labor, business, property income, and social security benefits. Post-tax income is actual income minus taxes and social insurance contributions.

The results above indicate that between-age-group inequality has slightly declined, while within-age-group inequality has widened over time.

To further examine this trend, the Theil index within each age group is analyzed. When age-group-specific Theil indices are aggregated into the overall within-group component, each age group's contribution depends on its share of total income. To compare inequality within each age group over time without incorporating changes in these income shares, we therefore report the age-group-specific Theil indices separately.

Figure 4 presents the trends in the Theil index by age group. These results show that income inequality among older age groups (65–75 and above 75) has declined over time, for both pre-tax and post-tax income. In contrast, inequality among working-age groups—particularly those aged 26–40, 41–50, and 51–64—has tended to increase, indicating a gradual widening of income disparities within the working population.

Figure 4. Theil Index within Each Age Group, 1999-2014

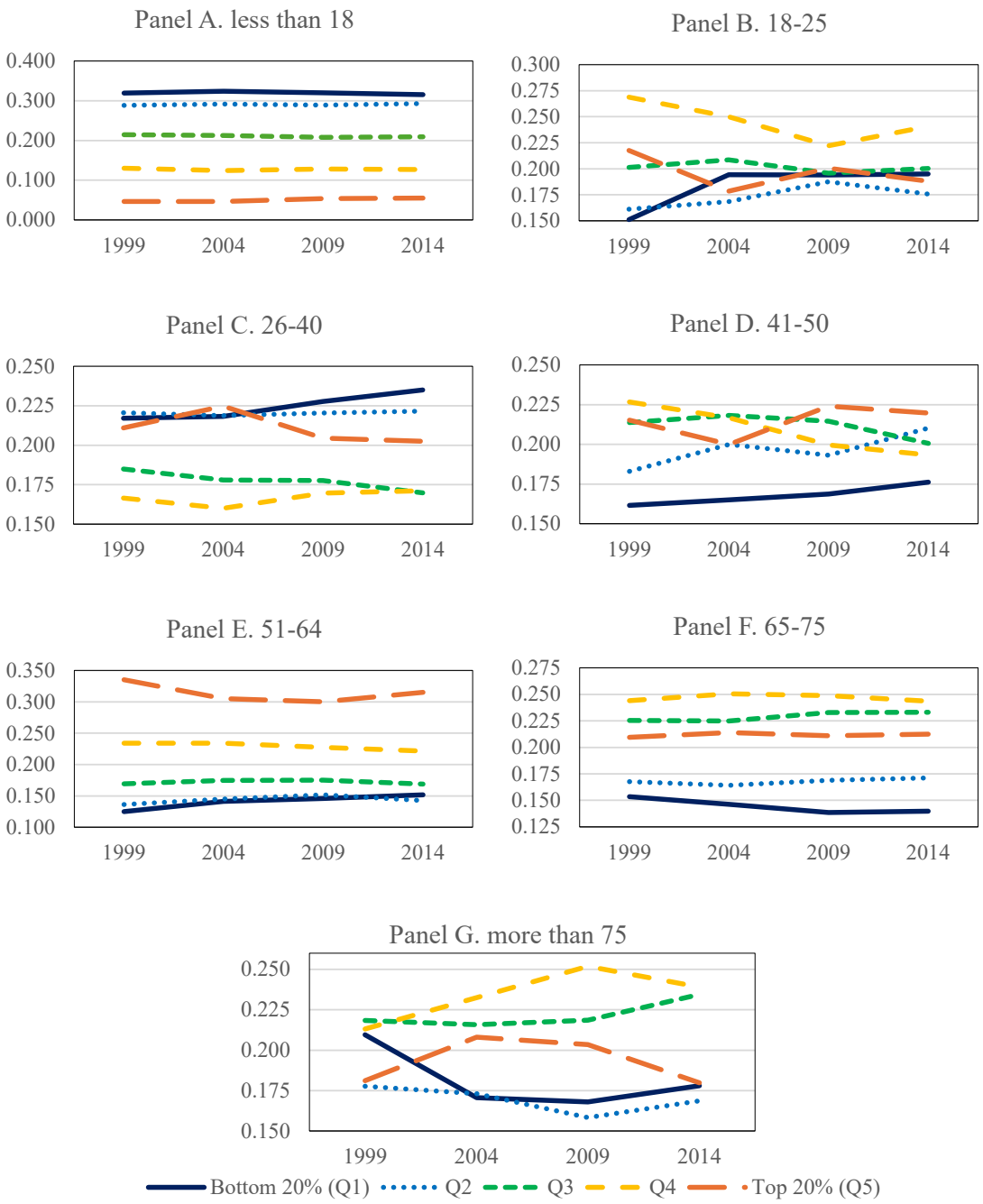


Source: Author's calculations based on the National Survey of Family Income and Expenditure (NSFIE).

Notes: Within-age-group Theil indices are reported without applying income-share weights across age groups. Income-share weighting is used when aggregating age-group-specific Theil indices into the overall within-group component, but it makes each age group's contribution depend on its share of total income. To facilitate comparisons of inequality within each age group over time, Figure 4 reports the unweighted age-group-specific Theil indices. Pretax income corresponds to "jitsushunyū" (actual income), which includes labor, business, property income, and social security benefits. Post-tax income is actual income minus taxes and social insurance contributions.

To examine the sources of widening inequality among the working-age population, Figure 5 presents the evolution of population shares across post-tax income quintiles within each age group. For the age groups in which inequality increased—namely those aged 26–40, 41–50, and 51–64—the shares of the top two quintiles remain broadly stable or decline slightly, whereas the shares of the bottom two quintiles increase over time. This pattern suggests that the widening of inequality was primarily driven by the expansion of the lower-income population. In contrast, among older age groups (65–75 and 76+), the share of the lowest-income quintile declines over time, indicating a pattern opposite to that observed among the working-age population. Taken together, these results suggest that the widening of inequality among the working-age population is associated with an expansion of the lower-income group, whereas the decline in inequality among older cohorts reflects a reduction in the share of the lowest-income group.

Figure 5. Evolution of Population Shares across Post-tax Income Quintiles within Age Groups



Source: Author's calculations based on the National Survey of Family Income and Expenditure (NSFIE).

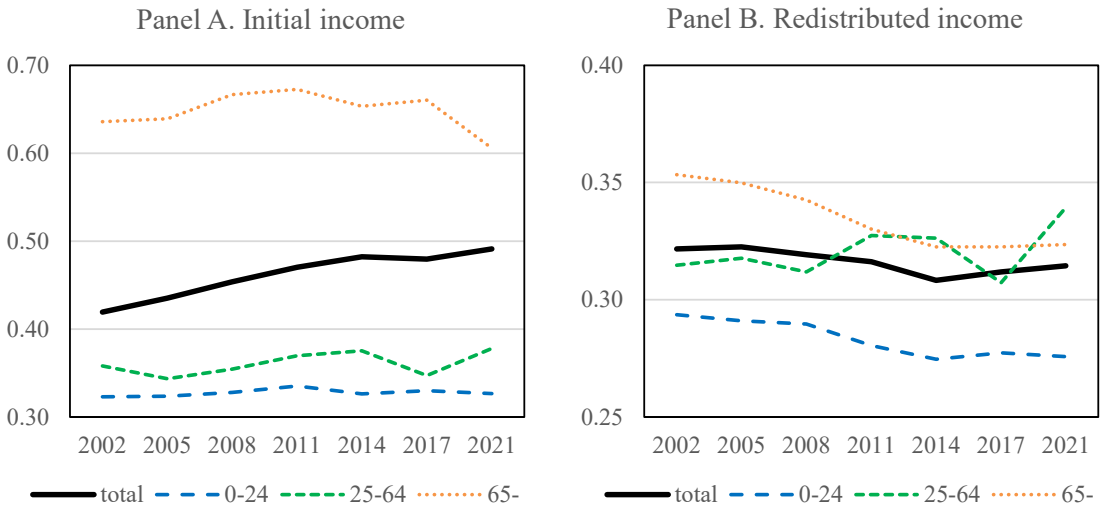
Notes: Income quintile cutoffs are defined for the overall population in each survey year. For each age group, the figure reports the share of individuals falling into each overall post-tax income quintile. Shares sum to one within each age group and survey year. Quintile populations are computed using the reconstructed age–income matrix obtained via the iterative proportional fitting (IPF) procedure described in Section 3.3. Post-tax income is defined as actual income minus taxes and social insurance contributions.

4.2 Redistribution Policy Evaluation

The previous section showed that income inequality in Japan has been widening within age groups, particularly among the working-age population. This section examines the role of fiscal redistribution in mitigating these trends.

Figure 6 presents the Gini coefficients for each generation based on initial and redistributed income. Panel A shows that the Gini coefficient for those aged 65 and over is substantially higher than that for other age groups, indicating a high level of inequality in market income among the elderly. In contrast, Panel B, which depicts redistributed income, shows a much lower Gini coefficient for the elderly, suggesting that social security programs—particularly the public pension system—have significantly reduced inequality within this age group.

Figure 6. Gini Coefficient within Broad Age Group, 2002-2021



Source: Author's calculations based on the Survey on the Redistribution of Income (SRI).

Notes: Gini coefficients are computed from published SRI tabulations and are based on equivalized household income (equivalence elasticity = 0.5). SRI provides Gini coefficients for 5-year age groups; Gini values for broad age categories (0–24, 25–64, 65+) are obtained by taking simple arithmetic averages across the relevant 5-year groups. Initial income includes market income and private transfers, while redistributed income subtracts taxes and social insurance contributions and adds public social security benefits in both cash and in-kind forms. Lines show within-group inequality, with the black line indicating overall inequality.

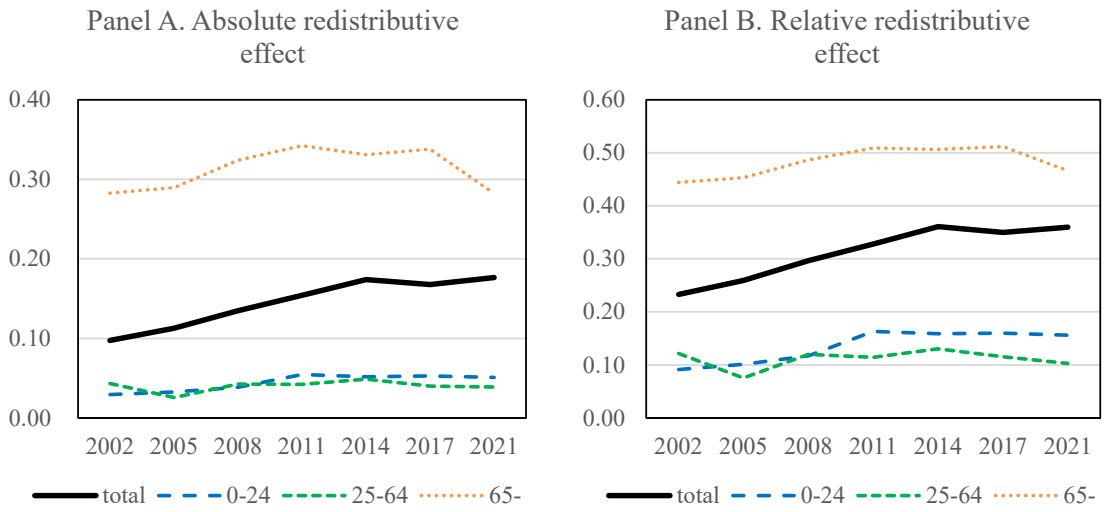
Focusing on the working-age population (25–64) after redistribution, the Gini coefficient exhibits a gradual upward trend and, in 2014 and 2021, even exceeds that of the elderly.

This pattern indicates that while redistribution policies effectively alleviate inequality among the elderly, their impact on the working-age population remains limited.

Figure 7 illustrates the redistributive effect, defined as the difference between the Gini coefficients of initial income and redistributed income and the ratio of this difference to the Gini coefficients of initial income, for each generation. The results clearly indicate that the redistributive effect is overwhelmingly concentrated among the elderly (65+), with Gini reductions of around 0.3 or around 50% throughout the period.

In contrast, the redistributive effect for the working-age population (25–64) and the younger generation (0–24) remains extremely limited, below 0.05 or 20%. This suggests that Japan's fiscal system reduces overall inequality primarily through transfers to the elderly, while its impact on inequality among the working-age population is minimal.

Figure 7. Redistributive Effect by Broad Age Group, 2002–2021



Source: Author's calculations based on the Survey on the Redistribution of Income (SRI).

Notes: Gini coefficients for each broad age group (0–24, 25–64, 65+) are constructed by taking simple averages of Gini values for the underlying 5-year age groups from SRI tabulations. Initial income includes market income and private transfers, whereas redistributed income subtracts taxes and social insurance contributions and adds public social security benefits in both cash and in-kind forms. Panel A shows the absolute redistributive effect, defined as the difference between Gini coefficients of initial and redistributed income. Panel B shows the relative redistributive effect, calculated as the absolute effect divided by the Gini coefficient of initial income.

5. Discussion

Summarizing the results thus far, the decomposition of income inequality in Japan over the past two decades reveals a contrasting pattern: while overall inequality has remained relatively stable, between-generation inequality has narrowed, whereas within-generation inequality has widened.

Furthermore, when examining inequality by age group, within-generation inequality has increased among the working-age population (ages 25–64), whereas it has declined among the elderly (65 and above). To explore the sources of these changes in within-generation inequality, we examine the evolution of the population distribution across income quintiles. Among the working-age population, the share of individuals in the bottom income quintile has increased over time. In contrast, among the elderly, the share of the lowest-income group has declined. The analysis of redistributive effects also shows that public transfers—such as pensions, healthcare, and long-term care benefits—generate substantial redistributive impacts for the elderly. By contrast, redistribution targeted toward the working-age population remains limited and has changed little over the past two decades. This suggests that Japan's tax and transfer system has not sufficiently adapted to the rising inequality among working-age individuals.

To interpret these findings, this section discusses the underlying mechanisms behind the decline in within-generation inequality among the elderly and the rise in within-generation inequality among the working-age population.

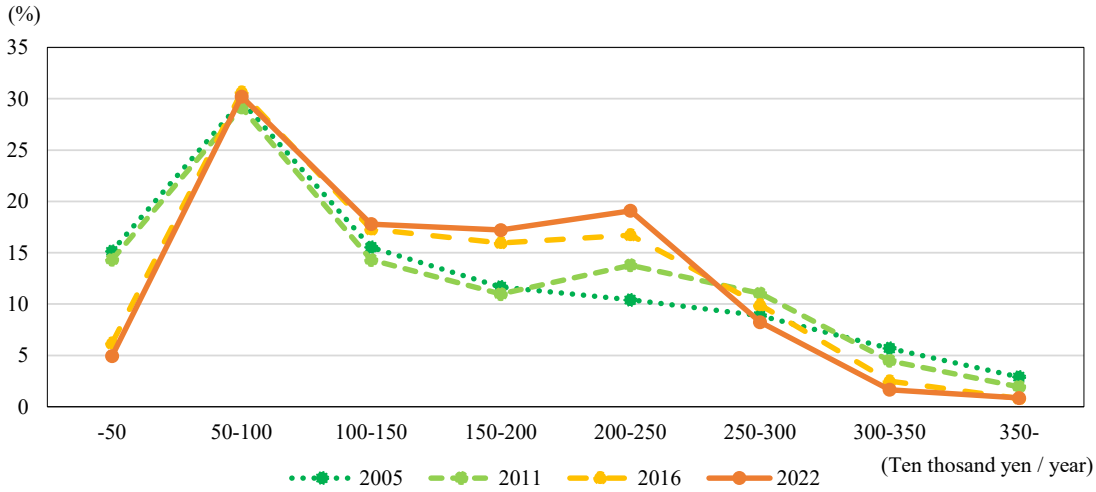
First, regarding the rise in inequality within the working-age population, the results indicate that the expansion of inequality was driven primarily by the growth of the lower-income population. This pattern is unlikely to be explained solely by labor market developments. During the period analyzed—from around 2000 to 2020—labor force participation among the working-age population increased, largely due to rising participation among women. This trend would mechanically reduce the number of individuals with little or no income, which runs counter to the observed expansion of the lower-income group.

Instead, the results may reflect changes in household structure. As noted by Kodama (2022), the working-age population in Japan has experienced a rise in non-marriage rates among low-income individuals as well as an increase in assortative mating. These trends may have increased the number of low-income individuals in terms of equivalized income, thereby contributing to the expansion of income inequality. Kodama (2022) also argues that while marriage historically played an equalizing role in income distribution, recent changes in marriage patterns have instead contributed to widening inequality.

Next, regarding the decline in inequality among the elderly, Kitao and Yamada (2025) highlight that the expansion and maturation of Japan's public pension system have played a central role in equalizing income among older individuals. Figure 8 shows the distribution of public pension benefits among recipients aged 65 and above by benefit level. Between 2005 and 2022, the shares of recipients in both the lowest benefit category (below 0.5 million yen) and the highest benefit categories (above 2.5 million yen) gradually declined. In contrast, the shares of recipients in the middle benefit categories—particularly 1.0–1.5 million yen and 2.0–2.5 million yen—increased over time. These trends indicate a compression of the distribution of pension benefits, suggesting that the

dispersion of pension income among elderly individuals has narrowed over time.

Figure 8. Distribution of Public Pension Benefits among Elderly Recipients, 2005–2022



Source: Author's calculations based on the Comprehensive Survey of Living Conditions of Pensioners.

Notes: The figure shows the distribution of annual public pension benefits among recipients aged 65 and above. Benefit amounts are measured in ten thousand yen per year. Shares represent the proportion of recipients in each benefit bracket. The survey used in this figure is conducted almost every year, but the target population rotates across different types of pension beneficiaries (old-age, survivors', and disability pensions). Therefore, observations for old-age pension recipients are available only for selected years.

This reduction in the dispersion of pension benefits may also reflect structural changes in employment patterns. In particular, the share of self-employed workers has declined over time, while the share of wage employees has increased. Because employees typically participate in earnings-related pension schemes in addition to the basic pension, this shift in employment composition may have contributed to a more concentrated distribution of pension benefits among retirees.

Taken together, the discussion suggests that the widening of income inequality among the working-age population is associated with changes in household structure, particularly the increase in single-person households and assortative mating. In contrast, the decline in inequality among the elderly appears to reflect a convergence in pension benefits, partly driven by structural changes in employment patterns, including the decline in self-employment and the rise in wage employment.

These findings suggest that policy responses to rising inequality among the working-age population should focus on strengthening support for low-income single individuals and vulnerable dual-earner households. In particular, policies that guarantee a minimum level of income for low-income single households, as well as measures that enable couples where both partners earn low wages to better balance work and family responsibilities, may help mitigate the expansion of income inequality.

One reason for this is that the traditional equalizing role of household income pooling has weakened. In the past, even if an individual's wage was relatively low, household income—including the earnings of a spouse—often ensured a certain standard of living. Today, however, this intra-household income equalization mechanism functions less effectively due to the rise in single-person households and assortative mating. At the same time, because these individuals are of working age, public income support for them remains limited, making individual wage levels more directly tied to living standards.

Finally, while the above discussion provides useful insights into the mechanisms and policy implications, it is important to acknowledge several data limitations of this study.

First, the time coverage of the two datasets is not fully aligned, with the NSFIE available only up to 2014 while the SRI extends to 2022. Consequently, the decomposition and redistribution analyses refer to partially overlapping but distinct periods, requiring caution in strict time-series comparisons.

Relatedly, a key limitation is that the analysis relies on cross-sectional comparisons across age groups rather than cohort-based comparisons. Ideally, one would track specific cohorts over time to assess how different generations benefit from the tax and transfer system. However, due to the limited time span and survey frequency of the available data, such a cohort-based analysis was beyond the scope of this paper.

Second, since this study relies on published aggregated tabulations rather than micro-level data, the underlying sample distribution cannot be fully examined. The absence of individual-level data precludes a detailed assessment of within-group heterogeneity and potential biases in sample composition. While both NSFIE and SRI ensure national representativeness through stratified multi-stage sampling, it should be noted that certain groups—such as foreign households and institutionalized individuals—are excluded from the analysis.

Furthermore, it is essential to distinguish between social insurance and tax-based redistribution, as these mechanisms serve distinct policy objectives. Public pension, healthcare, and long-term care systems are primarily designed as insurance mechanisms against life-cycle risks, rather than as instruments for redistribution per se. While these programs generate redistributive outcomes in practice, the present analysis does not disentangle their insurance and redistributive components due to data limitations.

Third, the measurement of equivalized income differs across datasets. NSFIE assumes an equivalence elasticity of 1.0, while SRI adopts a value of 0.5. This difference may affect comparisons across age groups because household size varies substantially over the life cycle. Under the NSFIE definition, household income is divided equally among household members without accounting for economies of scale in consumption. For example, a four-person household with an income of 4 million yen is assigned an income of 1 million yen per person, whereas under the SRI definition the corresponding equivalized income would be 2 million yen. As a result, larger households—which are

more common among working-age individuals—tend to have lower measured equivalized income under the NSFIE definition than under the SRI definition. Because working-age households are generally larger than elderly households, differences in equivalence scales may affect age-group comparisons. Therefore, differences in equivalence scales should be kept in mind when interpreting age-group differences in inequality and redistribution.

6. Conclusion

This study examined the evolution of income inequality in Japan from a generational perspective, combining a decomposition of the Theil index using the NSFIE with age-specific Gini coefficients from the SRI. The results show that overall inequality has remained relatively stable over the past two decades, but this apparent stability masks two opposing dynamics: inequality has declined among the elderly while widening within the working-age population.

The decomposition results indicate that Japan's overall income inequality is increasingly driven by disparities within generations rather than between them. Inequality has widened substantially among individuals aged 26–64, largely reflecting an expansion of the lower-income population.

The redistribution analysis also highlights the strong generational asymmetry of Japan's fiscal system. Public transfers such as pensions substantially reduce inequality among the elderly, with redistributive effects of 30–50 percent throughout the period. By contrast, they have only a limited equalizing effect for younger and working-age individuals, with reductions of roughly 5–20 percent. These findings suggest that Japan's redistributive system is highly effective at supporting older cohorts but far less responsive to the needs of younger generations. Moreover, the magnitude of the redistributive effect has remained broadly stable over the past two decades, suggesting that the current tax and transfer system has not sufficiently adapted to the rising inequality among working-age individuals.

Given that the widening of inequality among working-age individuals partly reflects the expansion of low-income households associated with changes in household structure—such as the increase in single-person households and assortative mating—the findings may point to two areas that warrant further policy consideration.

First, the introduction or expansion of an Earned Income Tax Credit (EITC) could help guarantee a minimum level of income for low-income single households. The present findings show an expansion of the lower-income population among working-age individuals. If future research confirms that a growing share of these individuals remain in employment despite persistently low earnings, this would provide additional support for policies such as an EITC that supplement labor income. Such policies would allow individuals with low wages and without high-earning partners to maintain both stable employment and an adequate standard of living.

Second, policies that enable low-wage dual-earner couples to better balance work and family responsibilities may also play an important role. However, the present study does not explicitly examine marital status, household labor supply decisions, or the mechanisms through which household structure contributes to income inequality. Future research is therefore needed to investigate whether low-income couples are more likely to experience labor-force withdrawal or involuntary transitions to part-time employment because one partner must compensate for the other's long working hours or assume a disproportionate share of childcare and household responsibilities. If such mechanisms are found to contribute to the expansion of low-income households, measures such as reducing excessive working hours and expanding access to parental leave and childcare services can help sustain dual-earner employment, thereby stabilizing household living standards even when individual wage levels remain modest.

Policies that stabilize income among the working-age population may also help prevent the expansion of inequality when these cohorts reach old age. This study shows that the decline in income inequality among the elderly is largely driven by the convergence in the distribution of pension benefits, which in turn reflects changes in past employment structures. The redistributive effects of the pension system depend to a considerable extent on stable employment histories and income smoothing within households. Therefore, if ongoing changes in household structure among the working-age population—such as the increase in single-person households and assortative mating—continue in the future, similar redistributive outcomes may not necessarily be sustained. Recent evidence suggests that unmarried women and irregular workers are less likely to prepare financially for old age and face a higher risk of old-age poverty, partly because they are less likely to accumulate pension entitlements through stable employment histories (Niimi, 2026). As the share of such households increases, the equalizing effects observed among current elderly cohorts may become more difficult to sustain.

In summary, this paper shows that the structure of income inequality in Japan is shifting from disparities between the elderly and the working-age population toward inequality within the working-age population itself. The findings highlight the growing importance of policies that stabilize income and employment among working-age individuals. However, the present analysis is descriptive in nature and relies on data aggregated by age and income groups. Therefore, whether policies such as an Earned Income Tax Credit (EITC) or work–family support measures can effectively reduce inequality among working-age households depends on whether the mechanisms discussed in this paper are actually driving the observed increase in inequality.

A more rigorous evaluation of policies aimed at reducing inequality requires causal evidence on the determinants of inequality among working-age households. Future research should therefore examine household-level datasets containing information on employment status, earnings, and family structure in order to identify the mechanisms through which changes in labor-market outcomes and

household composition contribute to inequality. Given the growing importance of inequality within the working-age population, a more detailed analysis of working-age households will be essential for designing effective anti-poverty and redistributive policies in Japan.

References

Autor, David H., Lawrence F. Katz and Melissa S. Kearney (2008). "Trends in U.S. Wage Inequality: Revising the Revisionists." *Review of Economics and Statistics*, 90(2), 300–323.

Chetty, Raj, Nathaniel Hendren, Patrick Kline and Emmanuel Saez (2014). "Where Is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States." *Quarterly Journal of Economics*, 129(4), 1553–1623.

Directorate-General of Budget, Accounting and Statistics, Executive Yuan, Republic of China (Taiwan) (2025). Statistical Yearbook of the Republic of China 2024. Directorate-General of Budget, Accounting and Statistics, Taipei. https://eng.stat.gov.tw/News_Content.aspx?n=4302&s=232198

Khera, Purva and Yun Gao (2024). *Sustainable Path to Inclusive Growth in Japan: How to Tackle Income Inequality?* IMF Selected Issues Paper No. 2024/026. International Monetary Fund, Washington, DC.

Kitao, Sagiri and Tomoaki Yamada (2025). "Earnings, Income, and Wealth Inequality in Japan: A Long-Term Perspective, 1984–2019." *The Japanese Economic Review*, 76, 231–283.

Kodama, Naomi (2022). "Changes in Household Structure and Weakening of Mutual Assistance by Families: Progress of Unmarried, Postponement of Marriage, Assortative Mating and Income Inequality." *Economic Analysis*, No. 205, 5–28.

Lise, Jeremy, Nao Sudo, Michio Suzuki, Ken Yamada and Tomoaki Yamada (2014). "Wage, Income and Consumption Inequality in Japan, 1981–2008: From Boom to Lost Decades." *Review of Economic Dynamics*, 17(4), 582–612.

Ministry of Health, Labour and Welfare (various years). Comprehensive Survey of Living Conditions of Pensioners. Ministry of Health, Labour and Welfare, Tokyo. https://www.mhlw.go.jp/toukei/list/95-1.html

Ministry of Health, Labour and Welfare (various years). Survey on the Redistribution of Income (SRI). Ministry of Health, Labour and Welfare, Tokyo. https://www.mhlw.go.jp/toukei/list/96-1.html

Moriguchi, Chiaki and Emmanuel Saez (2008). "The Evolution of Income Concentration in Japan, 1886–2005: Evidence from Income Tax Statistics." *Review of Economics and Statistics*, 90(4), 713–734.

Niimi, Yoko (2026). "Are Women Preparing for Old Age? Evidence from Japan." *The Journal of*

the Economics of Ageing, 34, 100646.

OECD (n.d.). Income Distribution Database (IDD). OECD Data Explorer. https://www.oecd.org/en/data/datasets/income-and-wealth-distribution-database.html

Piketty, Thomas and Emmanuel Saez (2003). "Income Inequality in the United States, 1913–1998." *Quarterly Journal of Economics*, 118(1), 1–39.

Statistics Bureau of Japan (various years). National Survey of Family Income and Expenditure (NSFIE). Statistics Bureau of Japan, Tokyo. https://www.stat.go.jp/english/data/zensho/index.html

World Inequality Database (n.d.). WID.world. https://wid.world/

World Inequality Lab (2024). *Distributional National Accounts Guidelines: Methods and Concepts Used in the World Inequality Database*. World Inequality Lab, Paris.