Burden Reduction and Redistribution Effects of Deductions in Income Tax: An Analysis Using Tax Data[*]

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Abstract

The tax deduction system is one of the key policy issues in Japan's income tax system. In order to understand how tax deductions affect the progressive burden structure of income tax, it is useful to understand the effect of tax deductions on burden reduction and income redistribution. In this paper, we quantitatively evaluate the burden reduction and redistribution effects of tax deductions and tax credits using tax data on income tax returns held by the National Tax Agency (2020). This paper shows that the burden reduction effect of deductions and credits is largely attributable to tax deductions rather than tax credits, and that the burden reduction effect is larger for higher income classes. This is due to the fact that the amounts of applicable deductions increase with income, especially the income-increasing portion of the employment income deduction and the deduction for social insurance premiums. The results also show that the income-increasing portion of deductions has a negative effect on income redistribution.

Keywords: income tax, tax deduction, tax credit, redistribution effect, tax data
JEL Classification: D31, H24

I.   Introduction

In recent years, Japan has been required to reconsider its income tax system, as it is con-

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sidered essential to review the tax burden on households in order to maintain the social security system. For example, it has been pointed out that the tax base has been greatly eroded by generous income tax deductions, and the deduction system has become an important policy issue.

These issues are included in the literature on tax expenditures. "Tax expenditures are special tax rules in the form of deductions, exclusions, credits, and favorable rates that benefit selected activities, industries, or groups of taxpayers" (Burman et al. 2017, p. 109), where the magnitude of burden reduction from tax expenditures has been discussed (Burman et al. 2008; Poterba 2011; Altshuler and Dietz 2011; Albarea et al. 2015; Avram 2018; Burman et al. 2017). In Japan, income and resident taxes are mainly structured to make extensive use of income tax deductions, and there has been much discussion of income deductions in the academic literature. In recent years, some studies have examined the degree of erosion of the tax base by measuring the size of income tax deductions, using household micro data (Morinobu and Nakamoto 2013; Matsuda et al. 2014; Yashio and Hachisuka 2014; Ohno et al. 2024). In a series of studies, it has been confirmed that Japan has a narrow tax base due to generous income tax deductions compared to other countries (Nakamoto 2014). There are also studies that evaluate the contribution of deductions in studies on the effect of reducing income inequality through taxes, i.e., the redistribution effect of taxes (Miyazaki and Kitamura 2016; Miyazaki et al. 2019).[1] Furthermore, the impact of deductions on tax burden reduction has also been considered. A series of studies have shown that the burden reduction effect (i.e., the reduction in the tax burden rate) of deductions is larger for higher income groups (Ohno et al. 2021; Ohno et al. 2025). Some studies have also considered the impact of the burden reduction associated with deductions on the redistributive effect. Currently, the employment income deduction is structured in such a way that the amounts of applicable deductions increase with income, and the deduction for social insurance premiums also increases with income because social insurance premiums increase with income, with some exceptions. Therefore, it has been confirmed that these features increase the burden reduction effect of deductions for higher income groups, while at the same time decreasing the redistribution effect (Ohno et al. 2025).

The burden-reducing effect of deductions is also related to the tax burden structure. Along with the tax rate structure, the income tax deduction is also an institutional factor that leads to a progressive burden structure in income taxes. Even if the tax rate is constant, the average tax rate would increase as income rises and the tax burden structure becomes more progressive when fixed income deductions are used. On the other hand, some studies have shown that the burden reduction effect of the deduction is greater for higher income groups. There are two reasons for this result based on the actual institutional characteristics. The first is the adoption of a progressive tax rate. When a progressive tax rate is adopted, even if the applicable income deductions are the same amount, the reduction in tax burden due to

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[1] There are studies on the impact of tax reforms in Japan's deduction system. For example, studies of the impact of deductions on employment include Bessho and Hayashi (2014), Bessho (2018), and Ogasa (2019).

deductions is greater for higher income groups than for lower income groups. The second is the use of deductions that increase as income rises, i.e., income-increasing deductions. In Japan's income tax system, examples of income-increasing deductions include the employment income deduction, the public pension deduction, and the deduction for social insurance premiums. Therefore, it is difficult to say whether income tax deductions make the tax burden structure more progressive. In the actual income tax system, there are a variety of deductions and the structure of individual deductions is diverse. Therefore, in order to understand how deductions affect the progressive burden structure in the current income tax system, it is necessary to understand the effect of deductions on burden reduction and redistribution, and to determine "which income classes benefit more from the burden reduction," and "how the burden reduction associated with the deductions changes the redistribution effect."

Therefore, this paper uses administrative record information held by the National Tax Agency to quantitatively evaluate the burden reduction effect of deductions in the income tax and its impact on the redistribution effect. Regarding the data used, specifically, we will use tax micro data (2020) (hereinafter referred to as "tax data")[2]. In using the tax data, the names of taxpayers and other information are kept confidential to protect their privacy. In Japan, many studies have already been accumulated in the literature. However, most have been conducted by applying microsimulation to micro data from survey statistics (e.g., the National Survey of Family Income and Expenditure, from the Statistics Bureau of the Ministry of Internal Affairs and Communications). Microsimulation is a method of estimating tax amounts by applying the actual tax system to information on household family structure and income, and in estimating income tax amounts, applicable deductions are also estimated in this process. While this method allows for micro data analysis of deductions, the number of deductions that can be considered is necessarily limited. Previous studies have mainly dealt with basic deduction, (special) spousal deduction, dependent deduction, deductions for social insurance premiums (SIPs), employment income deduction, and public pension deduction, which cover most of the deductions used by taxpayers in terms of applicable deduction amounts, while other deductions have been excluded from consideration. In contrast, the use of tax data offers two advantages. First, the tax data are not a sample survey, but cover a substantial number of taxpayers, over 20 million in each year, including very high-income taxpayers. Second, it is able to address all deduction items in the income tax system. In addition, actual, rather than estimated, amounts of applicable deductions for each deduction item are available. In capturing the burden reduction effect of deductions, we adopt the method of Burman et al. (2017) and measure the extent to which tax amounts change depending on whether or not the deduction is applied. In addition, as in Avram (2018), we measure the extent to which the tax reduces income inequality through changes in the amount of taxes for each individual depending on whether or not the deduction is ap-

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[2] In this joint study with the National Tax College, data from 2014 to 2020 are available. In this study, year-by-year measurements were also taken. Since each result is similar significantly from year to year, this paper shows only the 2020 results.

plied.

Section II summarizes the characteristics of Japan's income tax system and tax reforms. Section III describes the data used. Section IV examines income, deductions, and tax burdens by income classes. Section V discusses the burden-reducing effects of deductions and their impact on redistribution effects. Section VI contains the conclusions.

II.   Japan's Income Tax System

This section provides an overview of Japan's income tax system and recent tax reforms. In principle, income tax in Japan is levied in three forms: comprehensive taxation, separate self-assessed taxation, and separate withholding taxation. Among these, the comprehensive taxation and separate self-assessed taxation are applied in the annual tax return. The amount of income tax is determined through the following steps. First, income is determined by subtracting necessary expenses from various types of earning. The income tax system provides deductions for calculating income. The employment income deduction is subtracted from employment earning, and the public pension deduction is subtracted from public pensions. Second, various tax deductions are subtracted from the total of income subject to comprehensive taxation to calculate taxable gross income. And if there are income deductions that cannot be subtracted, they are deducted from various types of income subject to separate self-assessed taxation. Income deductions include the deduction for social insurance premiums (SIPs), deduction for small-scale enterprise mutual aid premiums (SEMAPs), deduction for life insurance premiums, deduction for earthquake insurance premiums, deduction for widows and single parents, deduction for working students, deduction for disabled persons, (special) spousal deduction, dependent deduction, basic deduction, deduction for miscellaneous losses, deduction for medical expenses, and deduction for donations. Third, if there is no income subject to separate self-assessed taxation, the tax amount is calculated by applying the tax rate to the taxable income. If there is income subject to separate self-assessed taxation, the tax amount for the separate self-assessed taxation is added to the tax amount subjected to the comprehensive taxation. Fourth, various tax credits are subtracted from this tax amount. Tax credits include dividend credits, special credits for housing loans, special credits for donations to political parties, and special credits for earthquake-proofing of houses. Finally, the amount of disaster relief is subtracted from this tax amount to obtain the standard income tax amount. In addition, the special income tax for reconstruction (the standard income tax amount multiplied by 2.1%) is added, and the foreign tax credit is subtracted to obtain the final income tax amount. This amount of income tax is hereinafter referred to as the amount of tax due.

The main tax reforms are as follows: First, the maximum tax rate was increased in 2015. The tax brackets were increased from 6 levels (5, 10, 20, 23, 33, and 40%) to 7 levels with a maximum rate of 45%. Previously, the minimum guaranteed amount of the employment income deduction was 650,000 yen. While the amount of the applicable deduction increased as employment earning increased, the maximum amount of the applicable deduction was

2.45 million yen (for employment earning of 15 million yen). After the revision in 2016 and 2017, however, the maximum applicable deduction for employment income was lowered to 2.2 million yen (employment earning of 10 million yen).

Starting in 2020, while the basic deduction was expanded, the deductions for employment income and public pensions were reduced. Previously, the applicable amount for the basic deduction was 380,000 yen. After the revision, the applicable deduction amount increased to 480,000 yen. However, a new measure was introduced to reduce the applicable amount of the basic deduction if the total income of the taxpayer exceeds 24 million yen. The minimum amount of the employment income deduction was lowered to 550,000 yen, and the maximum amount of the applicable deduction was lowered to 1.95 million yen (8.5 million yen of employment earning). The minimum guaranteed amount for the public pension deduction was previously 700,000 yen for those under age 65 and 1.2 million yen for those age 65 and over. In both cases, the applicable amount increased as the earning from public pensions increased. After the revision, the minimum guaranteed amount was lowered to 600,000 yen for those under age 65 and 1.1 million yen for those age 65 and over. The applicable amount will continue to increase as earning from public pensions increases, but the maximum amount of the applicable deduction was lowered to 1.955 million yen (10 million yen of earning from public pensions).

III.   Data

III-1.   Tax Data

This section describes the data used and the sample to be analyzed. This study will use administrative record information held by the National Tax Agency, specifically tax data on items listed in Tables 1 and 3 of the "Income Tax and Special Reconstruction Income Tax Return" (2021 tax return, i.e., 2020 income). However, taxpayer names and other information are kept confidential for privacy protection.

In Japan, micro data from government statistical surveys are available. Each of these surveys has its own unique and rich information and has been used in many studies. However, one of the statistical features of these surveys is that, for example, the income information does not include very high-income earners in the sample. In contrast, the tax data used in this study are not a sample survey, but cover a significant number of taxpayers (over 20 million for each year), including those with very high incomes. First, taxpayers whose employment earning exceeds 20 million yen are required to file an income tax return. Second, large shareholders (individuals who own a number or amount of shares equivalent to 3% or more of the total number of shares issued) are required to file a tax return for dividends from listed shares, etc. Third, self-employed individuals are in principle required to file a tax return. On the other hand, it should be noted that there are some types of information and samples that are not fully covered in the tax data. First, the sample is based on individuals, not households, and does not include information on family structure. Second, the tax data

cover income that is declared and subject to comprehensive taxation or separate self-assessed taxation. Therefore, interest income subject to separate withholding taxation, dividend income and capital gains that were paid under separate withholding taxation are not included in the tax data. In addition, salaried workers who do not receive salary from two or more sources at the same time and have no income other than salary are not included in the data, since they can complete the tax payment procedure only by year-end adjustment and are not required to file an income tax return in principle.

One of the characteristics of tax data is that they contain detailed income information. Japan's income tax system classifies income according to its nature. In addition, income tax is collected in three forms: comprehensive taxation, separate self-assessed taxation, and separate withholding taxation. Of these, the income tax return covers both the comprehensive taxation and the separate self-assessed taxation. Table 1 of the income tax return covers the subject of comprehensive taxation, which includes business income (business income, agricultural income), real estate income, interest income, dividend income, employment income, miscellaneous income (miscellaneous income from public pensions, miscellaneous income from business, and other miscellaneous income), and capital gains for comprehensive taxation and occasional income, and the amount of income related to these items is available. In addition, Table 3 of the tax return form covers the subject of separate self-assessed taxation, which includes short-term capital gains, long-term capital gains, capital gains of stocks, capital gains of land acquisitions, dividend income from stocks, income from futures transactions, forest income, and retirement income. Earning and income amounts related to these items are available.

The tax data contain detailed information for calculating the amount of income tax in a tax return, including not only the amount of earning and income, but also the amount of applicable tax deductions and tax credits. Tax deductions include deduction for SIPs, deduction for SEMAPs, deduction for life insurance premiums, deduction for earthquake insurance premiums, deduction for widows and single parents, deduction for working students, deduction for disabled persons, (special) spousal deduction, dependent deduction, basic deduction, deduction for miscellaneous losses, deduction for medical expenses, and deduction for donations. However, if a taxpayer has a salary subject to year-end adjustment, only the total of some deductions (total amount of year-end adjustment deductions) can be included in the tax return. Hence, for some samples, only the total amount of year-end adjustment deductions is available, the breakdown of which is unknown. Tax credits include dividend credits, housing-related tax credits such as special deductions for housing loans, special credits for donations to political parties, and foreign tax credits. The sample size for this study is approximately 22 million individuals in each year.

III-2. *Definition of Income and Sample*

This paper addresses two cases for the definition of income: (1) total income related to comprehensive taxation and (2) total income related to comprehensive and separate self-as-

sessed taxation.

Total income (1) that is related to comprehensive taxation includes the total amount of business income (business income, agricultural income), real estate income, interest income, dividend income, employment income, and miscellaneous income (miscellaneous income from public pensions, miscellaneous income from business, and other miscellaneous income). In addition, this includes the amount of applicable deduction for employment income and public pension that is added. The employment income deduction is obtained by applying the formula for determining the amount of the applicable deduction, and the public pension deduction is obtained by applying the formula for determining the amount of the applicable deduction.

For total income (2) that is related to the comprehensive taxation and the separate self-assessed taxation, the following elements are added to total income (1). The amounts of short-term capital gains, long-term capital gains, capital gains of stocks, capital gains from land acquisitions, dividend income, income from futures transactions, forestry income, and retirement income are added.

This paper deals with the sum of these two types of income. Regarding the deduction and credit system in Japan's income tax system, it is based mainly on the tax deduction. In addition, the tax deductions are first applied to income subject to the comprehensive taxation. And, if there is a residual amount of the deduction, it is then applied to income subject to the separate self-assessed taxation. In light of this, it is important to consider the effect of deductions in the context of the relationship between deductions and comprehensive taxable income, which is the main objective of this paper. Hence, this paper places emphasis on the case of total income (1).

This paper deals with two cases as the sample for analysis: (A) the case where all observations are used, and (B) the case where those subject to year-end adjustment are excluded (to be precise, those who only report the total amount of year-end adjustment deductions and not the breakdown are excluded). Basically, we will proceed with our discussion based on Sample (A). However, as mentioned above, there are those for whom the breakdown of the total amount of deductions for year-end adjustment is unknown. Therefore, when focusing on these breakdown items among deductions, we also employ Sample (B).

III-3.   Sample Correction Method

The tax data used in this study do not include samples that pay taxes through withholding and do not file tax returns. Therefore, if the tax data are used as is, the measurement results may have bias. Due to this, we use the published data from the National Tax Agency's "Survey on Private Wages (SPW)" and adjust the sample to reflect those salaried workers whose tax payments were completed through withholding taxation. Specifically, we adopt the methodology of Moriguchi and Saez (2010) and perform the following procedure.

First, we use the "Number of Salaried Workers by Salary Class" in the SPW to identify the number of persons by each class. In this case, the salary class is based on employment

earning. Then, using the "White Paper on the Public Service" of the National Personnel Authority, the number of salaried employees and the number of civil servants (both are total numbers) are taken as a ratio, and the number of civil servants is added to the number of employees in the SPW by each class. We assume that the distribution of civil servants' salaries is the same as the distribution of private salaried employees. The tax data are then used to create a salary class based solely on employment earning for those with employment earning. The threshold of the salary class is then the same as the threshold using the SPW. Then, using the tax data and the SPW (corrected for civil servants), the difference in the number of people in each class is taken and this is considered to be the "salaried employees whose tax payments are completed through withholding." Then, using the tax data and the SPW (those who should be added), the ratio of the number of persons in each class is obtained, and a multiplier for adjustment is created. In this case, a multiplier above 1 is assigned to "persons with salary earning of 20 million yen or less and with salary earning" in the sample of tax data, and a multiplier of 1 is assigned to all other persons. Finally, an adjustment multiplier is applied and measured in each aggregate item.

IV.   Income, Deductions, and Tax Burden

This section examines income, deductions, and tax burdens by income class. We begin by examining the characteristics of income distribution. Table 1 shows the income distribution. We treat two cases for total income and two cases for the sample, for a total of four cases. Panel (a) shows the number of persons and relative frequencies (uncorrected) for each income class. Sample (A) has about 21.81 million people and Sample (B) has about 19.79 million people, which is the sample size for this study. There is a difference of about 2 million people between the two samples, which corresponds to about 10% of the sample size of Sample (A). For these approximately 2 million individuals, the breakdown of tax deductions is not clear due to the use of the year-end adjustment deduction. Panel (b) shows the cumulative relative frequencies (uncorrected and corrected) for each income class. In all cases, the cumulative relative frequencies are around 90% for the income class of "over 9 million yen and up to 10 million yen." Therefore, most of the taxpayers have income of 10 million yen or less. On the other hand, although the number of taxpayers in the higher classes is smaller, the inclusion of very high-income taxpayers in the sample for analysis is a feature of this study. The following discussion is based on the corrected measurement results.

Next, we will look at the actual status of application of deductions. Figure 1 shows the amount of applicable deductions by income class in the case of total income (1) and Sample (A). Here, deductions for income calculation, i.e., employment income deduction and public pension deduction, are included in the amounts of applicable deductions. Panel (a) is for the income classes of "over 50 million yen and up to 100 million yen" and below, while Panel (b) is for the income classes of "over 50 million yen and up to 100 million" and above. Panel (a) shows that the total amount of applicable deductions tends to increase with income level. This is due to the fact that the employment income deduction and deductions subject

Table 1. Income distribution

(a) Frequency and relative frequency: uncorrected

Income classes		Total income 1				Total income 2			
		Sample A		Sample B		Sample A		Sample B	
		Number of persons	Relative frequency	Number of persons	Relative frequency	Number of persons	Relative frequency	Number of persons	Relative frequency
	Zero yen or less	610,250	2.80%	502,680	2.54%	517,580	2.37%	498,159	2.52%
Over zero yen	up to 1 million yen	2,163,017	9.92%	2,139,355	10.81%	2,200,109	10.09%	2,091,744	10.57%
Over 1 million yen	up to 2 million yen	3,320,376	15.22%	3,261,604	16.48%	3,275,626	15.02%	3,216,041	16.25%
Over 2 million yen	up to 3 million yen	4,258,966	19.53%	4,125,175	20.84%	4,202,709	19.27%	4,068,884	20.56%
Over 3 million yen	up to 4 million yen	3,040,821	13.94%	2,825,138	14.27%	3,017,791	13.84%	2,802,065	14.16%
Over 4 million yen	up to 5 million yen	2,098,232	9.62%	1,827,247	9.23%	2,089,408	9.58%	1,818,418	9.19%
Over 5 million yen	up to 6 million yen	1,478,475	6.78%	1,221,601	6.17%	1,475,684	6.77%	1,218,803	6.16%
Over 6 million yen	up to 7 million yen	1,077,236	4.94%	861,476	4.35%	1,077,766	4.94%	862,000	4.35%
Over 7 million yen	up to 8 million yen	840,673	3.85%	639,389	3.23%	843,629	3.87%	642,328	3.24%
Over 8 million yen	up to 9 million yen	628,146	2.88%	466,028	2.35%	632,859	2.90%	470,742	2.38%
Over 9 million yen	up to 10 million yen	451,328	2.07%	337,515	1.71%	458,755	2.10%	344,905	1.74%
Over 10 million yen	up to 20 million yen	1,395,836	6.40%	1,141,737	5.77%	1,465,490	6.72%	1,211,029	6.12%
Over 20 million yen	up to 30 million yen	278,366	1.28%	278,102	1.40%	321,724	1.48%	320,912	1.62%
Over 30 million yen	up to 40 million yen	80,714	0.37%	80,393	0.41%	101,590	0.47%	100,733	0.51%
Over 40 million yen	up to 50 million yen	34,721	0.16%	34,557	0.17%	45,712	0.21%	45,258	0.23%
Over 50 million yen	up to 100 million yen	41,952	0.19%	41,561	0.21%	60,708	0.28%	59,839	0.30%
Over 100 million yen	up to 500 million yen	11,052	0.05%	10,870	0.05%	21,681	0.10%	21,261	0.11%
Over 500 million yen	up to 1 billion yen	311	0.00%	305	0.00%	1,126	0.01%	1,099	0.01%
Over 1 billion yen	up to 2 billion yen	96	0.00%	95	0.00%	416	0.00%	407	0.00%
Over 2 billion yen		39	0.00%	38	0.00%	244	0.00%	239	0.00%
Total		21,810,607	100.00%	19,794,866	100.00%	21,810,607	100.00%	19,794,866	100.00%

(b) Cumulative relative frequencies: before and after correction

Income classes		Total income 1				Total income 2			
		Sample A		Sample B		Sample A		Sample B	
		Before correction	After correction	Before correction	After correction	Before correction	After correction	Before correction	After correction
	Zero yen or less	2.80%	1.09%	2.54%	1.07%	2.37%	1.02%	2.52%	1.15%
Over zero yen	up to 1 million yen	12.72%	5.94%	13.35%	6.67%	12.46%	5.92%	13.08%	6.65%
Over 1 million yen	up to 2 million yen	27.94%	15.71%	29.82%	17.76%	27.48%	15.56%	29.33%	17.60%
Over 2 million yen	up to 3 million yen	47.47%	31.52%	50.66%	35.02%	46.75%	31.19%	49.89%	34.64%
Over 3 million yen	up to 4 million yen	61.41%	48.91%	64.94%	52.55%	60.58%	48.37%	64.04%	51.92%
Over 4 million yen	up to 5 million yen	71.03%	64.30%	74.17%	67.03%	70.16%	63.57%	73.23%	66.18%
Over 5 million yen	up to 6 million yen	77.81%	75.64%	80.34%	77.43%	76.93%	74.79%	79.38%	76.44%
Over 6 million yen	up to 7 million yen	82.75%	83.50%	84.69%	84.62%	81.87%	82.58%	83.74%	83.55%
Over 7 million yen	up to 8 million yen	86.60%	88.81%	87.92%	89.33%	85.74%	87.88%	86.98%	88.25%
Over 8 million yen	up to 9 million yen	89.48%	92.05%	90.27%	92.21%	88.64%	91.15%	89.36%	91.17%
Over 9 million yen	up to 10 million yen	91.55%	94.27%	91.98%	94.18%	90.74%	93.41%	91.10%	93.18%
Over 10 million yen	up to 20 million yen	97.95%	99.03%	97.75%	98.86%	97.46%	98.56%	97.22%	98.33%
Over 20 million yen	up to 30 million yen	99.23%	99.63%	99.15%	99.57%	98.94%	99.39%	98.84%	99.29%
Over 30 million yen	up to 40 million yen	99.60%	99.81%	99.56%	99.78%	99.40%	99.65%	99.35%	99.60%
Over 40 million yen	up to 50 million yen	99.75%	99.88%	99.73%	99.87%	99.61%	99.77%	99.58%	99.74%
Over 50 million yen	up to 100 million yen	99.95%	99.98%	99.94%	99.97%	99.89%	99.93%	99.88%	99.92%
Over 100 million yen	up to 500 million yen	100.00%	100.00%	100.00%	100.00%	99.99%	99.99%	99.99%	99.99%
Over 500 million yen	up to 1 billion yen	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Over 1 billion yen	up to 2 billion yen	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Over 2 billion yen		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Source: National Tax Agency Administrative Records Information (Income Tax, 2020)

to year-end adjustment in particular increase with income level. However, while the employment income deduction and the deduction subject to year-end adjustment increase up to the income class of 10 million yen, they remain about the same for income classes above

that level. This is due to the fact that the amount of the employment income deduction increases as employment earning rises. However, the maximum amount of the employment income deduction is reached at 8.5 million yen of employment earning. Panel (b) shows that the higher the income class, the larger the amount of the deduction for donations. Since the maximum amount of the deduction for donations is 40% of gross income, the higher the income, the higher the maximum amount of the deduction for donations. In fact, the amount of the applicable deduction for donations to very high-income classes is quite high.
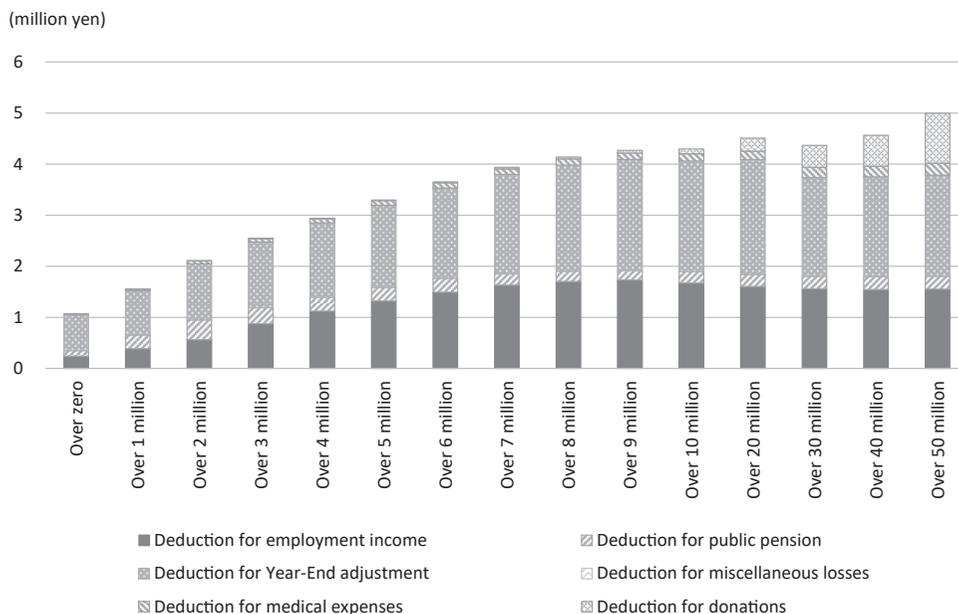
Given that the amount of deductions subject to year-end adjustment increases with income level, we look at the breakdown of deductions subject to year-end adjustment. Figure 2 shows the amounts of deductions subject to year-end adjustments applied by income class in the case of total income (1) and Sample (B). Panel (a) is for income classes of "over 50 million yen and up to 100 million yen" and below, while Panel (b) is for income classes of "over 50 million yen and up to 100 million yen" and above. Panel (a) shows that the deduction for year-end adjustment is characterized by the deduction for SIPs. In other words, the deduction for SIPs increases with income level, but the amount of the deduction for SIPs remains almost the same for income levels above 10 million yen. This is due to the fact that SIPs increase with income, and that SIPs are capped at an income level of about 10 million yen. Panel (b) shows that the deduction for SIPs and the deduction subject to year-end adjustment are almost constant.

Figure 3 shows the amount of tax credits applied by income class in the case of total income (1) and Sample (A). Panel (a) covers the income classes of "over 50 million yen and up to 100 million yen" and below, while Panel (b) covers the income class of "over 50 million yen and up to 100 million yen" and above. Panel (a) shows that the special credit for housing loans is mainly used up to the income level of "20 million yen to 30 million yen." The results of Panel (b) also show that the dividend deduction is mainly used in the income classes above this level.
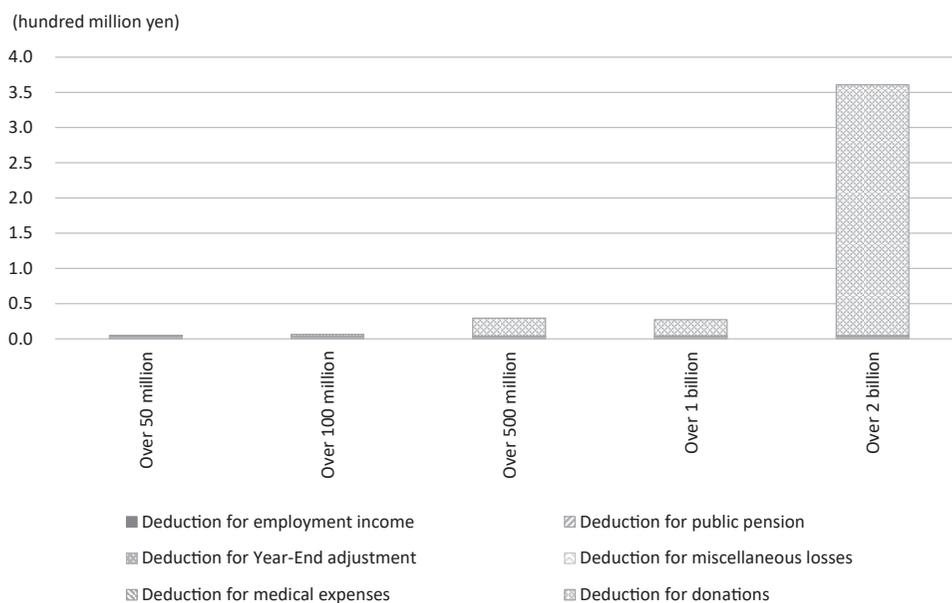
We point out several aspects of the applicable deductions and credits. First, we determine what percentage of income is accounted for by the applicable deductions and credits. Table 2 shows the tax burden ratio and deduction ratio by income class in the case of total income (1) and Sample (A). The tax burden ratio is the amount of tax due as a percentage of total income (1). The deduction ratio is the ratio of the tax deduction to total income (1). These deductions also include the employment income deduction and public pension deduction (tax credits are not included). First, the average tax burden ratio (for the entire sample) is 2.2%. By income class, the tax burden ratio rises with income class, indicating a progressive burden structure. However, the tax burden ratio is 5.8% for the income class of "over 9 million yen and up to 10 million yen." This income class is included in the top 10% in terms of cumulative relative frequency and is positioned as a high-income class. The fact that the tax burden remains at a low level, below 10%, in most of the sample is due to generous tax deductions. The average deduction ratio is 68.1%. By income class, the deduction ratio declines as the income level increases. However, even for the income class of "over 9 million yen and up to 10 million yen," the deduction ratio is 45.1%, indicating that even in this

Figure 1. Amount of applicable deductions

(a) By income class of 100 million yen and less

(million yen)

- ■ Deduction for employment income
- ▨ Deduction for public pension
- ▩ Deduction for Year-End adjustment
- ▥ Deduction for miscellaneous losses
- ▧ Deduction for medical expenses
- ▨ Deduction for donations

(b) By income class of 50 million yen or more

(hundred million yen)

- ■ Deduction for employment income
- ▨ Deduction for public pension
- ▩ Deduction for Year-End adjustment
- ▥ Deduction for miscellaneous losses
- ▧ Deduction for medical expenses
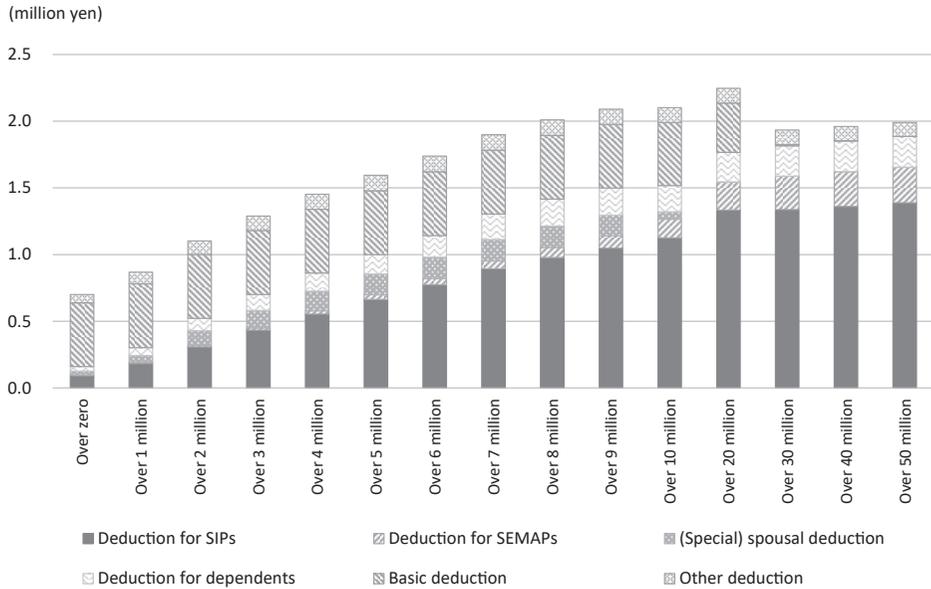- ▨ Deduction for donations

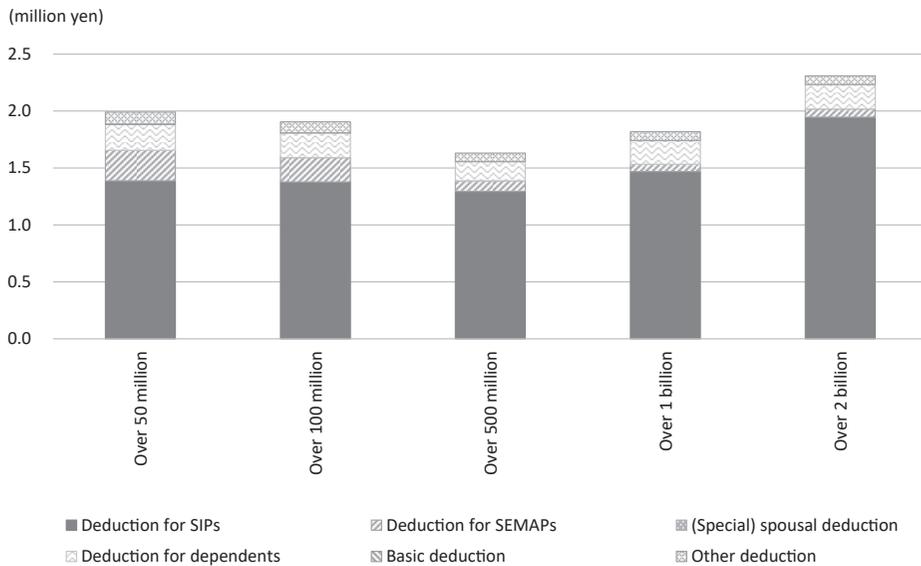Note: Income classes are classified based on total income (1).
Source: National Tax Agency Administrative Records Information (Income Tax, 2020)

Figure 2. Amount of applicable deductions subject to year-end adjustment

(a) By income class of 100 million yen or less

(million yen)

(b) By income class of 50 million yen or more
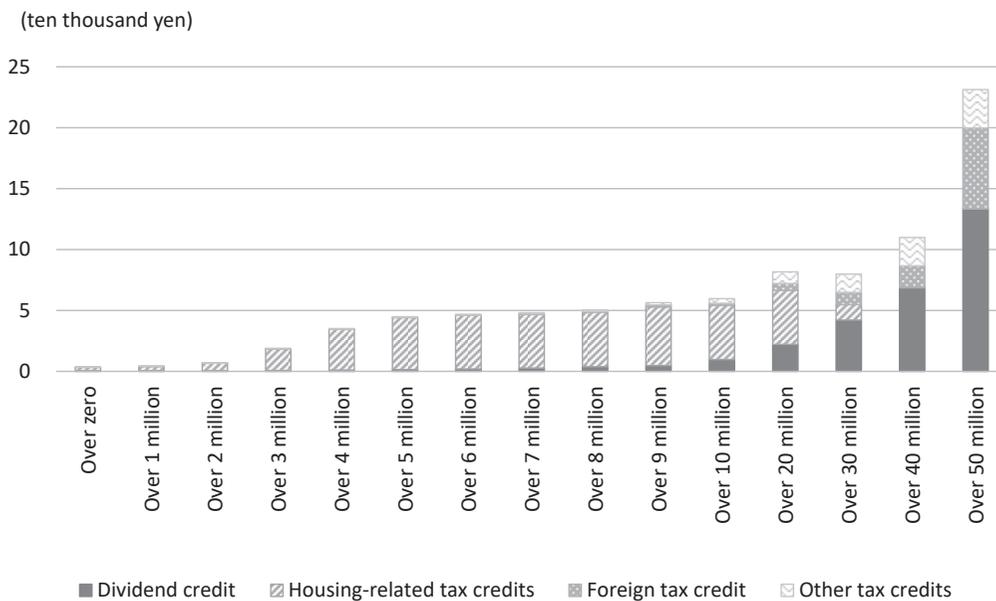
(million yen)

Note 1: The income classes are classified based on total income (1).
Note 2: Other income tax credits include the deduction for life insurance premiums, the deduction for earthquake insurance premiums, the deduction for widows and single parents, the deduction for working students, and the deduction for disabled persons.
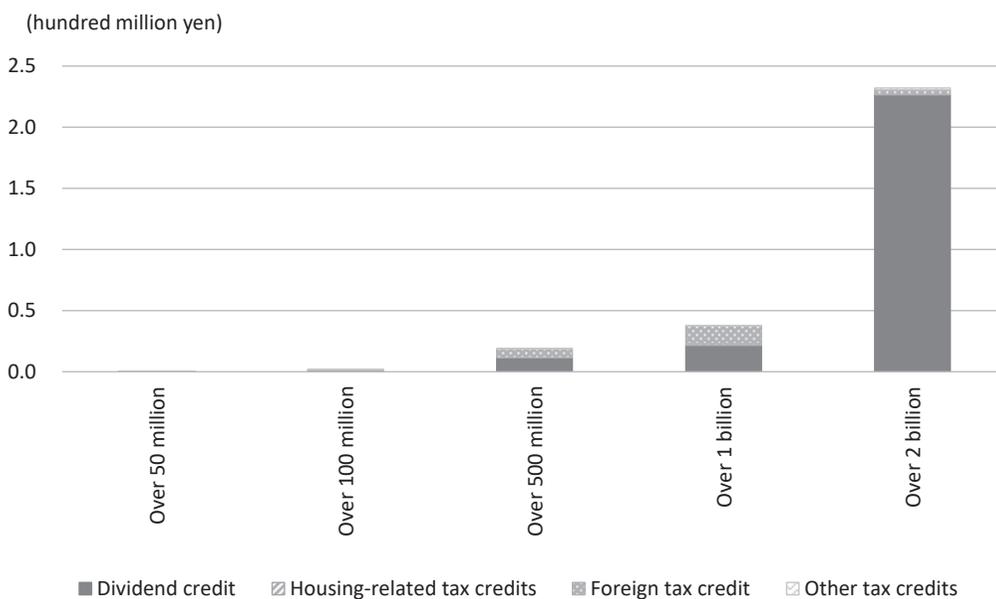Source: National Tax Agency Administrative Records Information (Income Tax, 2020)

Figure 3. Amount of applicable tax credit

(a) By income class of 100 million yen or less

(ten thousand yen)

■ Dividend credit   ▨ Housing-related tax credits   ▧ Foreign tax credit   ▨ Other tax credits

(b) By income class of 50 million yen or more

(hundred million yen)

■ Dividend credit   ▨ Housing-related tax credits   ▧ Foreign tax credit   ▨ Other tax credits

Note: Income classes are classified based on total income (1).
Source: National Tax Agency Administrative Records Information (Income Tax, 2020)

higher income class, about half of the total income is deducted. In addition, 88.8% of the sample are included up to the income class of "over 7 million yen and up to 8 million yen," but more than half of their total income was deducted through tax deductions. Japan's income tax system has a narrow tax base due to generous income tax deductions, and these characteristics extend to higher income classes as well.

Second, we examine how the actual use of the tax deductions differs by age group. As mentioned above, Figure 1 shows the amounts of applicable deductions by income class, but they are measured by income class and do not take other factors such as age into account. For example, since there are relatively few persons aged 65 and over in each income class, deductions that are likely to be used more frequently by persons aged 65 and over, such as public pension deduction, are likely to be underestimated. Therefore, we capture the actual use of tax deductions by age group. Table 3 shows the amount of applicable deductions by age group (Sample A), and while there is little difference in the total amount of applicable deductions between those under 65 and those over 65, differences can be seen in the breakdown. On the one hand, for those under 65, deductions for employment income and donations are relatively large. On the other hand, for those aged 65 and over, deductions for public pensions and medical expenses are relatively large.

Third, we examine the characteristics of the amounts of the applicable deductions for employment income and public pensions. When looking at the amount applied, those under 65 years old use the employment income deduction more, while those over 65 years old use the public pension deduction more. Both deductions have similar institutional characteristics, with the applicable deduction amount increasing with income along with the minimum deduction amount, but there are some differences in actual usage. Table 4 shows the applicable deductions for employment income and public pensions in the case of Sample (A). There, 14.4% of those who use the employment income deduction have the minimum amounts of applicable deductions, and 85.6% have more than the minimum amounts of applicable deductions. Thus, in the case of the employment income deduction, the applicable deduction amount exceeds the minimum deduction amount for most persons. This means that most of them are taking advantage of the so-called income-increasing portion, in which the amount of the applicable deduction increases with income. On the other hand, 92.5% of those who use the public pension deduction have the minimum deduction amount, and 7.5% have a deduction amount that exceeds the minimum deduction amount. Thus, in the case of the public pension deduction, the applicable deduction amount does not exceed the minimum deduction amount for most persons. This means that the income-increasing portion is rarely used, and the actual situation is similar to the application of a fixed-amount deduction.

V.   Burden Reduction and Redistribution Effects of Deductions

This section discusses the burden reduction effect of deductions and their impact on the redistribution effect. Based on the discussion in the previous section, the amount of applicable deductions actually used is large for the deduction of employment income and social in-

Table 2. Deduction ratios

Income classes		Income distribution: Cumulative relative frequency	Tax burden ratio (to income)	Reduction ratio (to income)
	Zero yen or less	1.09%	-	-
Over zero yen	up to 1 million yen	5.94%	0.06%	97.94%
Over 1 million yen	up to 2 million yen	15.71%	0.41%	89.73%
Over 2 million yen	up to 3 million yen	31.52%	0.84%	80.95%
Over 3 million yen	up to 4 million yen	48.91%	1.19%	72.27%
Over 4 million yen	up to 5 million yen	64.30%	1.46%	65.37%
Over 5 million yen	up to 6 million yen	75.64%	1.87%	60.16%
Over 6 million yen	up to 7 million yen	83.50%	2.44%	56.38%
Over 7 million yen	up to 8 million yen	88.81%	3.35%	52.68%
Over 8 million yen	up to 9 million yen	92.05%	4.54%	48.90%
Over 9 million yen	up to 10 million yen	94.27%	5.79%	45.09%
Over 10 million yen	up to 20 million yen	99.03%	9.92%	34.30%
Over 20 million yen	up to 30 million yen	99.63%	20.11%	19.20%
Over 30 million yen	up to 40 million yen	99.81%	26.27%	12.83%
Over 40 million yen	up to 50 million yen	99.88%	29.37%	10.31%
Over 50 million yen	up to 100 million yen	99.98%	33.58%	7.76%
Over 100 million yen	up to 500 million yen	100.00%	38.79%	4.31%
Over 500 million yen	up to 1 billion yen	100.00%	40.69%	2.24%
Over 1 billion yen	up to 2 billion yen	100.00%	39.81%	2.07%
Over 2 billion yen		100.00%	40.08%	6.02%
Total			2.19%	68.11%

Note: Total income (1) and sample (A) are used.
Source: National Tax Agency Administrative Records Information (Income Tax, 2020)

Table 3. Applicable deductions: by age group

	Total (yen)	Under 65 y/o (yen)	65 y/o and over (yen)
Amount of applicable deduction	2,788,925	2,750,624	2,886,480
(Breakdown)			
Employment income deduction	1,006,623	1,157,728	621,743
Public pension deduction	277,425	24,679	921,198
Deductions subject to year-end adjustment	1,408,316	1,475,045	1,238,352
Deduction for miscellaneous losses	1,002	1,022	951
Deduction for medical expenses	77,429	71,795	91,778
Deduction for donations	18,128	20,354	12,459

Source: National Tax Agency Administrative Records Information (Income Tax, 2020)

Table 4. Applicable deductions for employment income and public pensions

Amount of applicable deduction	Employment income deduction (%)	Public pension deduction		
		Under 65 y/o (%)	65 y/o and over (%)	Total (%)
Individuals subject to the minimum amount	14.4%	82.1%	94.2%	92.5%
Individuals subject to over minimum amount	85.6%	17.9%	5.8%	7.5%

Source: National Tax Agency Administrative Records Information (Income Tax, 2020)

surance premiums. And for the elderly, the amount of public pension deduction is large. In addition, since these deductions are based on a mechanism that increases the amounts of applicable deductions as income rises, the total amount of applicable deductions increases as income rises. The following discussion reflects these characteristics. Through the discussion in this section, we will then provide evidence on "which income classes benefit more from the burden reduction" and "how the burden reduction associated with deductions changes the redistribution effect."

V-1.   *Burden Reduction Effects of Deductions*

In examining the burden reduction from deductions, we employ the method of Burman et al. (2017) to measure the extent to which tax amounts change depending on whether or not deductions are applied. First, we estimate the tax amount with the deduction applied, referred to as tax amount (a). Next, we estimate the hypothetical tax amount without the deduction, referred to as tax amount (b). Since the tax deductions and credits contribute to tax burden reduction, tax amount (b) will always be greater than tax amount (a). The difference between the two tax amounts is treated as the burden reduction from the deduction.

First, we examine the burden reduction effect of deductions under the current system. Figure 4 shows the burden reduction due to deductions by income class in the case of total income (1) and Sample (A). Deductions here reflect the impact of tax deductions and credits. Panel (a) covers the income class of "over 50 million yen and up to 100 million yen" and below, while panel (b) covers the income class of "over 50 million yen and up to 100 million yen" and above. Panel (a) shows that the burden reduction from deductions and credits is almost entirely due to the contribution of tax deductions, while the contribution of tax credits is limited. On the other hand, panel (b) shows that the contribution of tax credits is also large for the very high-income group.

Next, we examine the share of the burden reduction from deductions relative to income. This captures the extent to which deductions reduce the tax burden rate. Figure 5 shows the burden reduction ratio of deductions by income class in the case of total income (1) and Sample (A). The burden reduction ratio is taken as the ratio of the reduction to total income (1). Panel (a) shows the effect of deductions in general and the effect of the deduction for

employment income and public pensions. Deductions in general include tax deductions and credits. The effect of deductions in general is that the burden reduction ratio rises to about 11% for the income class of "over 7 million yen and up to 8 million yen," then remains almost flat until the income class of "over 10 million yen and up to 20 million yen," and then the burden reduction ratio declines for the income classes above that. This suggests that the burden reduction effect of the deduction under the current system appears to have an inverted U shape. However, since the cumulative relative frequency of the income class of "over 10 million yen and up to 20 million yen" is over 99%, when considering majority of the income distribution, the burden reduction ratio of deductions has an increasing effect. Moreover, the higher the income class, the greater the burden reduction effect of deductions. Therefore, in the current income tax system, the burden-reducing effect of deductions weakens the progressive burden structure.

In order to further examine the impact of deductions for employment income and public pensions, we measured the burden reduction ratio of deductions in two cases: (1) excluding deductions for employment income and public pensions, and (2) excluding deductions for employment income and public pensions (income-increasing portion only). In both cases, the burden reduction ratio is smaller than in the case of deductions in general. These changes are considered to be the effect of (1) the deductions for employment income and public pensions and (2) the deductions for employment income and public pensions (income-increasing portion only). The results show that the impact of (1) employment income deductions and public pension deductions is significant, and without these deductions, the burden reduction ratio would fall to around 6% for the income class of "over 7 million yen and up to 20 million yen." The burden reduction ratio for the income class of "over 7 million yen and up to 20 million yen" would be 8% without these deductions.

We examine the impact of the employment income deduction alone. Panel (b) shows the effects of deductions in general and of the employment income deduction in particular. To capture the impact, we measure the burden reduction ratio of deductions (1) without the employment income deduction and (2) without the employment income deduction (income-increasing portion only). As shown in the figure, the impact of employment income deductions is significant. Without these deductions, the burden reduction ratio for the income class of "over 7 million yen and up to 20 million yen" would be as low as 7%. The income-increasing portion increases also has a large impact. As shown in Table 4, this result reflects the fact that the income-increasing portion of the employment income deduction is used more frequently.

Similarly, we examine the impact of the public pension deduction only. Panel (c) shows the effects of deductions in general and of the public pension deduction. To capture the impact, we measure the burden reduction ratio of the deduction for (1) without the public pension deduction, and (2) without the public pension deduction (income-increasing portion only). As shown in the figure, the impact of the public pension deduction is relatively small. The income-increasing portion has almost no impact. This result reflects the fact that the income-increasing portion of the public pension deduction is not widely used, as shown in Ta-

ble 4.

Finally, we examine the impact of the deduction for employment income, public pensions, and SIPs. However, in order to include the deduction for SIPs, it is necessary to use Sample (B) because it deals with the breakdown of deductions subject to year-end adjustment. Figure 6 shows the burden reduction ratio of deductions by income class in the case of total income (1) and Sample (B). The burden reduction ratio is taken as the ratio of the reduction to total income (1). Panel (a) shows the effect of deductions in general and the effect of deductions for employment income and public pensions. When comparing Panel (a) of Figure 5 with Sample A and Panel (a) of Figure 6 with Sample B, the results are similar for both samples. Panel (b) of Figure 6 shows the effects of deductions in general and of the deduction for employment income, public pensions, and SIPs. In order to capture the impact of these deductions, we measured the burden reduction ratio of deductions in the following three cases: (1) without the deductions for employment income, public pensions, and SIPs; (2) without the deductions for employment income, public pensions, and SIPs (income-increasing portion only); and (3) without the deduction for SIPs.[3] As the figure shows, the impact of these three deductions is significant. Without these deductions, the burden reduction ratio for the income class of "over 7 million yen and up to 20 million yen" would fall to around 4%. In addition, the income-increasing portion has a large impact. As shown in Panel (a) of Figure 1 and Panel (a) of Figure 2, this result reflects the high use of the income-increasing portion of the deduction for employment income and the deduction for SIPs.

V-2.　Impact on Redistribution Effects

In capturing the impact of the burden reduction effect of the tax deductions and credits on the redistribution effect, we employ the method of Avram (2018) to measure the extent to which the redistributive effect of the tax changes through the change in each individual's tax amount depending on whether the deductions and credits are applied or not. Here, we capture the change in income inequality due to the tax as a measure of the redistribution effect, and we use the Gini coefficient as a measure of inequality. The Gini coefficient for pre-tax income is denoted as $Gini_{pre}$. We use three types of post-tax income. First, the Gini coefficient for post-tax income (A) in the case where the tax amount is calculated with all deductions and credits applied, i.e., based on the actual tax system, is denoted as $Gini_{post\_A}$. Second, the Gini coefficient of post-tax income (B) when the tax amount is computed without applying any deductions and credits is $Gini_{post\_B}$. Third, the Gini coefficient of post-tax income (C) when the tax amount is calculated without applying some deductions is $Gini_{post\_C}$.
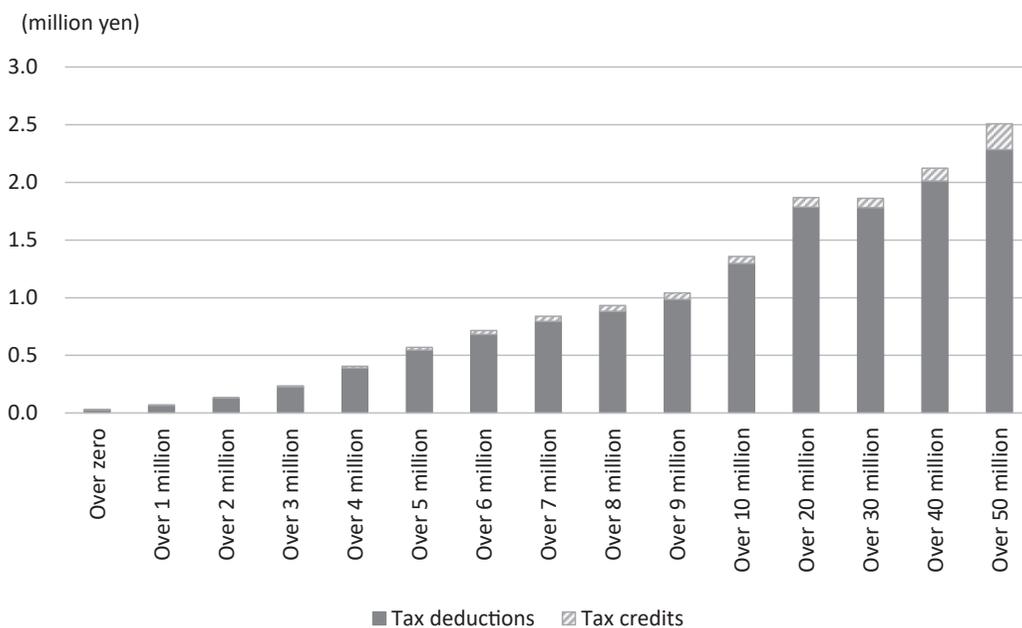
The effect of the overall tax system RE_{total} is measured as the change in the Gini coefficient from pre-tax income to post-tax income (A).

$$RE_{total} = Gini_{pre} - Gini_{post\_A} \tag{1}$$

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[3] (2) "Deductions for employment income, public pensions, and SIPs (income-increasing portion only)" includes the income-increasing portion of deduction for employment income, the income-increasing portion of deduction for public pensions, and all of deduction for SIPs.

Figure 4. Burden reduction effect of deductions (amount of reduction)

(a) By income class of 100 million yen or less

(million yen)

■ Tax deductions   ▨ Tax credits

(b) By income class of 50 million yen or more

(hundred million yen)
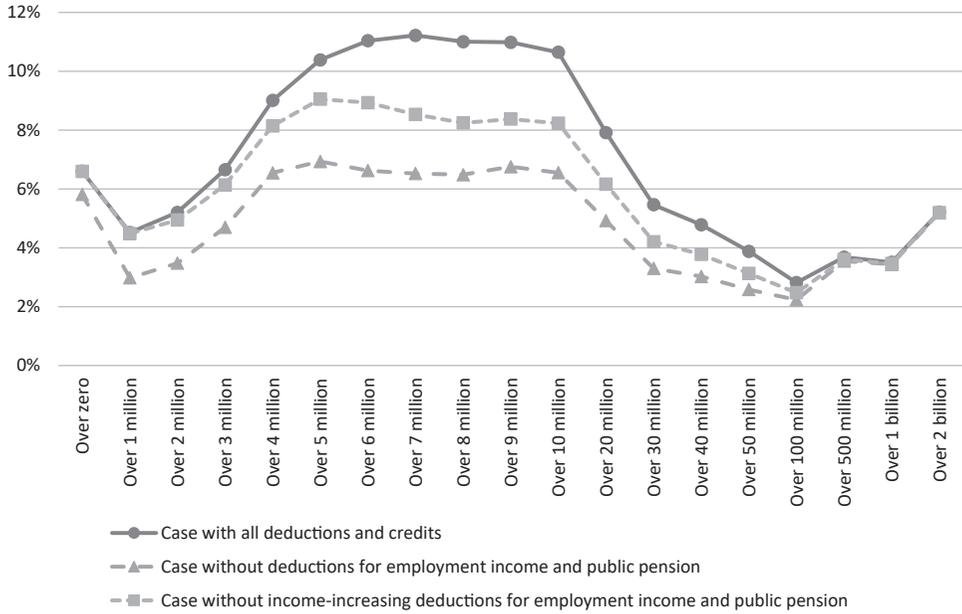

■ Tax deductions   ▨ Tax credits
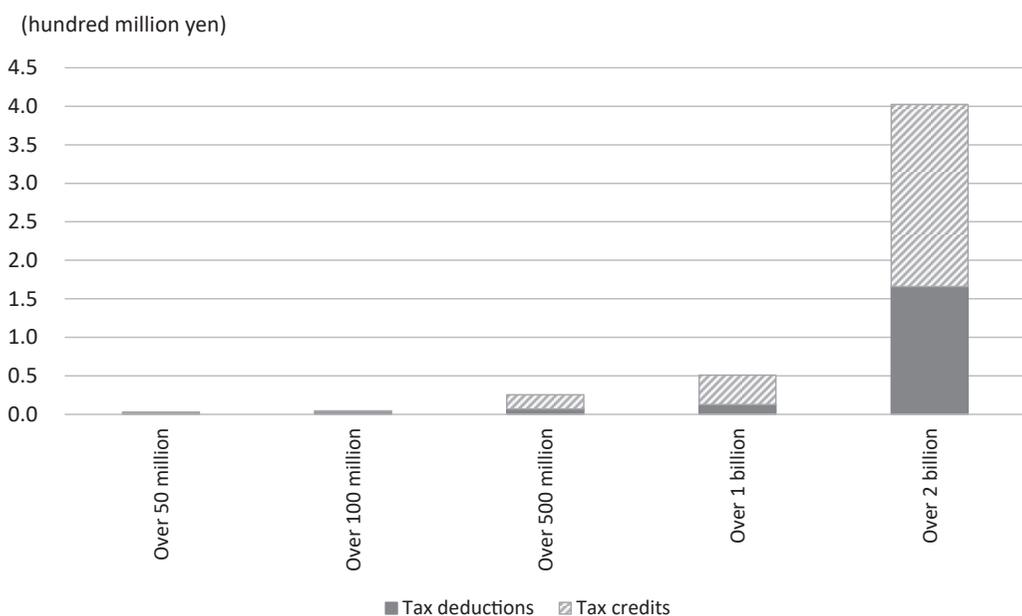
Note: Total income (1) and sample (A) are used for income classes.
Source: National Tax Agency Administrative Records Information (Income Tax, 2020)

Figure 5. Burden reduction effect of deductions (reduction ratio)

(a) Effect of deductions for employment income and public pensions

- ●— Case with all deductions and credits
- ▲- Case without deductions for employment income and public pension
- ■- Case without income-increasing deductions for employment income and public pension

(b) Effect of employment income deduction

- ●— Case with all deductions and credits
- ▲- Case without deductions for employment income
- ■- Case without income-increasing deductions for employment income
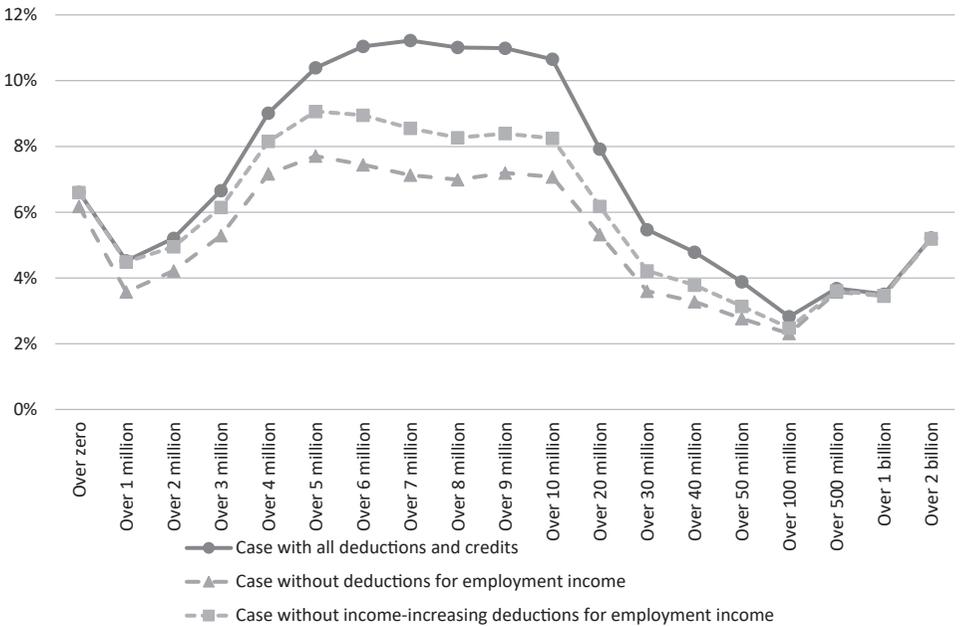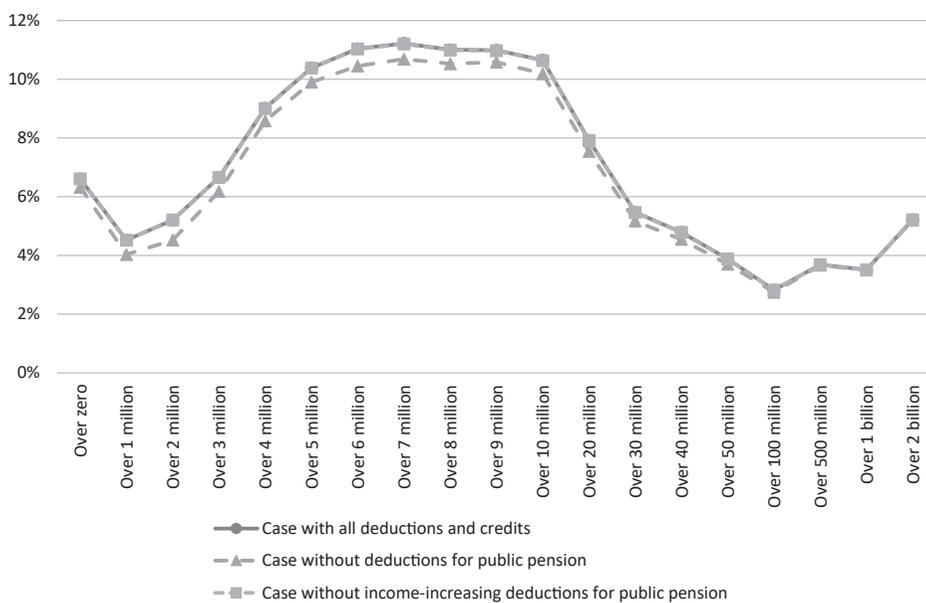
Figure 5. Burden reduction effect of deductions (reduction ratio)

(c) Effect of public pension deduction

Note: Total income (1) and Sample (A) are used.
Source: National Tax Agency Administrative Records Information (Income Tax, 2020)

Figure 6. Burden reduction effects of deductions (reduction ratio)

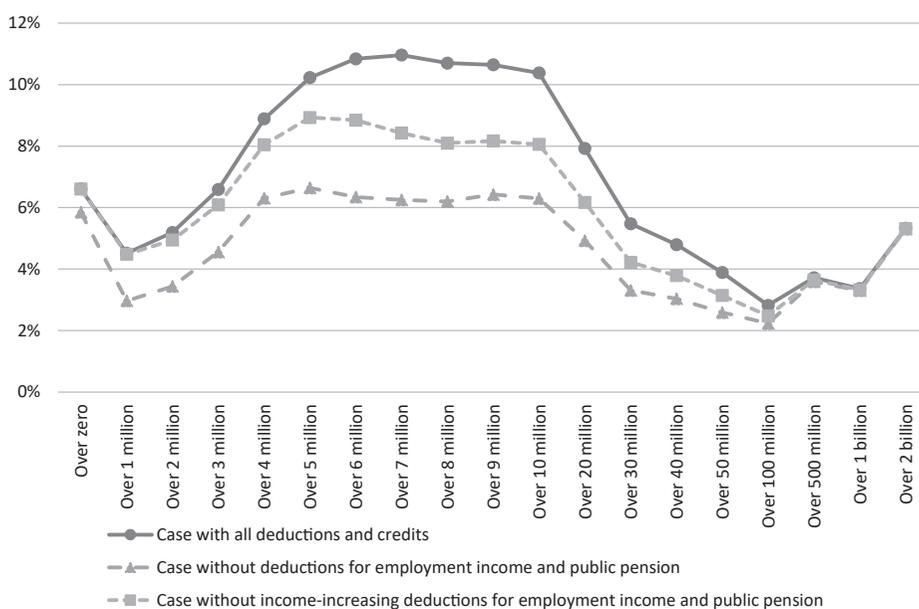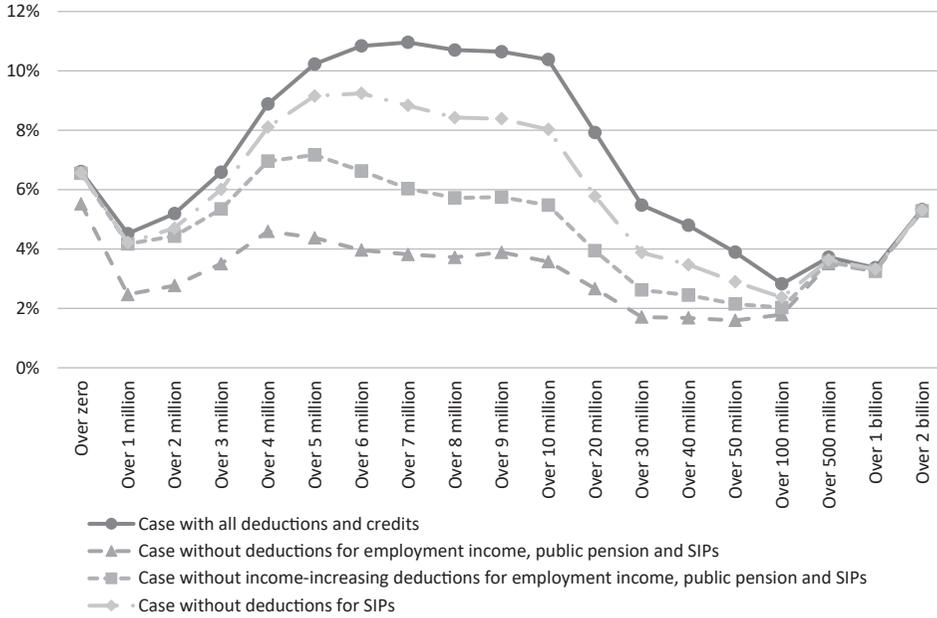(a) Effect of deductions for employment income and public pensions

Figure 6. Burden reduction effects of deductions (reduction ratio)

(b) Effect of deductions for employment income, public pensions, and SIPs

Note: Total income (1) and Sample (B) is used.
Source: National Tax Agency Administrative Records Information (Income Tax, 2020)

Among the effects of the overall tax system, the effect of tax rates RE_{rate} is measured as the change in the Gini coefficient from pre-tax income to post-tax income (B).

$$RE_{rate} = Gini_{pre} - Gini_{post\_B} \qquad (2)$$

Among the effects of the overall tax system, the effect of deductions $RE_{deduction}$ is measured as the change in the Gini coefficient from post-tax income (B) to post-tax income (A).

$$RE_{deduction} = Gini_{post\_B} - Gini_{post\_A} \qquad (3)$$

Among the effects of deductions, the effect $RE_{particular}$ of the specific deduction is measured as the change in the Gini coefficient from post-tax income (C) to post-tax income (A).

$$RE_{particular} = Gini_{post\_C} - Gini_{post\_A} \qquad (4)$$

The effect of the deduction on other deductions, excluding the specific deduction, RE_{other}, is measured as the change in the Gini coefficient from post-tax income (B) to post-tax income (C).

$$RE_{other} = Gini_{post\_B} - Gini_{post\_C} \qquad (5)$$

We examine the impact of the burden reduction effect of deductions on the redistribution effect. We will again focus on the effect of the employment income deduction, the public pension deduction, and the deduction for SIPs in particular. Table 5 shows income inequality and the magnitude of redistribution effects. Two cases are used for total income and two cases for the sample, and a total of four cases of results are treated. The characteristics of the

measurement results are the same in all cases. The Gini coefficient for pre-tax income using tax data is 0.365 to 0.419, while the Gini coefficient for post-tax income (post-tax income (A) under the current system) is 0.342 to 0.393. As a result, the redistributive effect of the income tax is 0.023 to 0.026[4].

The results for Sample (A) in Table 5 confirm that the burden reduction effect of deductions contributes to widening inequality and weakens the redistribution effect of the tax. These results reflect that the employment income deductions, especially the income-increasing portion of the deduction, have an effect on increasing inequality. As shown in panel (b) of Figure 5, this reflects the large burden reduction effect of employment income deductions, especially the income-increasing portion. On the other hand, the public pension deduction has little effect on income inequality. This reflects the small burden reduction effect of the public pension deduction, as shown in panel (c) of Figure 5.

We further examine the impact of including the deduction for SIPs. However, in order to include the deduction for social insurance premiums, it is necessary to use Sample (B). The results for Sample (B) in Table 5 confirm that the burden reduction effect of deductions contributes to increasing inequality. Three deductions, including the deduction for employment income, public pensions, and SIPs, have similar impact on increasing inequality. And among these, the impact of the income-increasing portion is significant. The effect of deductions on the burden reduction is larger for higher-income groups, and this finding confirms that deductions contribute to the decrease in the redistribution effect.

VI. Conclusion

In recent years, Japan has been required to reconsider its income tax system, as it is considered essential to review the tax burden on households in order to maintain the social security system. Under these circumstances, it has been pointed out that one of the challenges facing Japan's income tax is that the tax base has been greatly eroded by generous income tax deductions, and this leads to a decline in not only the ability of the income tax to raise financial resources but also in income redistribution. To understand these possibilities, we need to examine the impact of deductions on the tax burden structure. The income tax deduction, as well as the tax rate structure, is one of the institutional factors that contribute to a progressive burden structure in the income tax system. However, since the actual income tax system has a variety of deductions, it is difficult to say whether income tax deductions make the tax burden structure more progressive or not. Therefore, in order to understand the impact of deductions on the progressive burden structure in the current income tax system, it is necessary to understand the effect of deductions and credits on the burden reduction and re-

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[4] Several considerations must be taken into account when interpreting these results. For example, when using survey statistics, income is based on households. Therefore, the equivalent household basis is used, and the disposable income level is used after applying public benefits, taxes, and social insurance contributions. On the other hand, when using tax data, it is beneficial to include very high-income groups in the sample to be analyzed. However, income is on an individual basis, and for post-tax income, the level after applying only income tax is used.

Table 5. Income inequality and redistribution effects

		Sample A		Sample B	
		Total income 1	Total income 2	Total income 1	Total income 2
Gini coefficients					
Pre-tax income	(a1)	0.365	0.396	0.384	0.419
Post-tax income A with applying all deductions and credits	(a2)	0.342	0.372	0.359	0.393
Post-tax income B w/o applying all deductions and credits	(a3)	0.330	0.365	0.347	0.386
Post-tax income C w/o applying deductions for employment income and public pention	(a4)	0.336	0.368	0.353	0.389
Post-tax income C w/o applying income-increasing deductions for employment income and public pention	(a5)	0.337	0.368	0.354	0.389
Post-tax income C w/o applying deductions for employment income	(a6)	0.336	0.368	0.353	0.389
Post-tax income C w/o applying income-increasing deductions for employment income	(a7)	0.337	0.368	0.354	0.389
Post-tax income C w/o applying deductions for public pension	(a8)	0.342	0.372	0.359	0.393
Post-tax income C w/o applying income-increasing deductions for public pension	(a9)	0.342	0.372	0.359	0.393
Post-tax income C w/o applying deductions for SIPs	(a10)			0.355	0.390
Post-tax income C w/o applying deductions for employment income, public pention and SIPs	(a11)			0.349	0.386
Post-tax income C w/o applying income-increasing deductions for employment income, public pention and SIPs	(a12)			0.350	0.386
Redistribution effects					
Effect of overall tax system	(b1)=(a1)-(a2)	0.023	0.024	0.025	0.026
Effect of tax rates	(b2)=(a1)-(a3)	0.035	0.031	0.037	0.033
Effect of deductions and credits	(b3)=(a3)-(a2)	-0.012	-0.007	-0.012	-0.007
Effect of deductions for employment income and public pention	(b4)=(a4)-(a2)	-0.006	-0.004	-0.006	-0.004
Effect of income-increasing deductions for employment income and public pention	(b5)=(a5)-(a2)	-0.005	-0.004	-0.005	-0.004
Effect of deductions for employment income	(b6)=(a6)-(a2)	-0.006	-0.004	-0.006	-0.004
Effect of income-increasing deductions for employment income	(b7)=(a7)-(a2)	-0.005	-0.004	-0.005	-0.004
Effect of deductions for public pention	(b8)=(a8)-(a2)	0.000	0.000	0.000	0.000
Effect of income-increasing deductions for public pention	(b9)=(a9)-(a2)	0.000	0.000	0.000	0.000
Effect of deductions for SIPs	(b10)=(a10)-(a2)			-0.004	-0.003
Effect of deductions for employment income, public pention and SIPs	(b11)=(a11)-(a2)			-0.010	-0.007
Effect of income-increasing deductions for employment income, public pention and SIPs	(b12)=(a12)-(a2)			-0.009	-0.007

Source: National Tax Agency Administrative Records Information (Income Tax, 2020)

distribution. In this paper, we use tax data on income tax returns held by the National Tax Agency (2020) to measure the burden reduction and redistribution effects of deductions and examine "which income classes benefit more from the burden reduction," and "how the burden reduction associated with deductions changes the redistribution effect."

First, in terms of the amounts of applicable deductions, the employment income deduction and the deduction for SIPs are widely used deductions, while the public pension deduction is a widely used deduction for the elderly. In addition, since these deductions are based on a mechanism that increases the amounts of applicable deductions as income rises, the total amount of applicable deductions increases with income level. Furthermore, when looking at the ratio of applicable deductions to income, the average deduction ratio is 68.1%, which is a high level. Although the deduction ratio tends to decrease as the income level increases, for example, 88.8% of the sample is below the income level of "over 7 million yen and up to 8 million yen," and in most of these income classes, more than half of the total income is deducted through tax deductions. Japan's income tax system has a narrow tax base due to generous tax deductions, and these characteristics extend to higher income classes as well.

Second, when looking at the burden reduction of deductions as a percentage of income, the burden reduction effect of deductions under the current system has an inverted U shape. However, if considering the majority of the income distribution, the burden reduction effect of deductions increases with income. The higher the income class, the greater the burden reduction effect of deductions. Therefore, in the current income tax system, the burden reduction effect of deductions weakens the progressive burden structure. This is due to the income-increasing portion of deductions for employment income and SIPs.

Third, income taxes function to correct income inequality. However, it was confirmed that the burden reduction effect of deductions contributes to widening inequality and weakens the redistributive effect of the tax. Especially, the income-increasing portion of the deductions for employment income and SIPs contributes to widening inequality.

To restore the income redistribution function of the income tax, it is necessary to consider how to enhance the progressive burden structure. And, for this purpose, not only the tax rate structure but also deductions should be the subject of consideration. Based on the discussion in this paper, it is possible to strengthen the progressive burden structure by reducing deductions, especially the income-increasing portion. In the 2010s, the income tax system was revised in a number of ways, including by reducing the employment income deduction. Among them, changes were made to the employment income deduction, such as setting a cap on the amounts of applicable deductions and further lowering the cap. However, while these efforts have increased the burden rate of higher income classes, the impact on the redistribution effect of the income tax system has been limited (Ohno et al. 2025). The deduction reform also needs to focus on the income-increasing portion to enhance the income redistribution.

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