The Shrinking Middle Class in Japan

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This study identifies changes in the size of the middle class in Japan's population using microdata from the Ministry of Health, Labour and Welfare's *Comprehensive Survey of Living Conditions* and examines the factors behind them. It also examines policies that could help increase the proportion of the middle class based on this analysis. Between 1985 and 2018, the proportion of Japan's middle class within the national population declined. The decline was particularly large from 1985 to 2000 and stabilized from 2003 to 2018. It is confirmed that, when the range considered to be "middle class" is fixed with a particular year as a benchmark, cases in which larger declines in the proportion of the middle class can occur. An international comparison shows that the proportion of Japan's middle class is lower than the OECD average based on figures calculated from the abovementioned survey. Moreover, the declining middle class is more pronounced compared to the OECD average. However, when the statistics of the Ministry of Internal Affairs and Communications's *National Survey of Family Income and Expenditure* are used, the proportion becomes higher than the OECD average. Thus, it must be noted that the trend changes depending on the statistics used for international comparison. Behind the change in the proportion of the middle class is the fact that the proportion of households classified as the middle class is higher for households with a working member than for those without. The decrease in the share of non-retired households and the increase in the share of retired households are the main reasons for the decline in the share of the middle class in the population. Redistribution through taxes and social security has the effect of boosting the proportion of the middle class. This boosting effect is mainly evident among retired households. For non-retired households, the effect is relatively small and was smaller in 2018 compared to 1985.

1. Introduction

In this study, we define the middle class in terms of income and uses microdata from the Ministry of Health, Labour and Welfare (MHLW)'s *Comprehensive Survey of Living Conditions* (hereafter "CSLC") to examine changes in the proportion of the middle class in Japan's households. We also identify the factors that change the proportion of the middle class, mainly in terms of working status and the aging of the population. We will also compare the results for Japan's middle class with those of other countries and clarify the characteristics of the changes in Japan's middle class.

While economic inequality between nations has decreased during the 20th and 21st centuries, domestic income inequality is increasing (Alvaredo et al. 2017), and the proportion of the middle class has been observed to be declining in many countries (OECD 2019). Causes of the decline in the proportion of the middle class include the fact that routine tasks such as clerical work and handicrafts, which are in the middle of the wage distribution, are being replaced in developed countries due to globalization and technological innovation (Goos et al. 2014) and the weakening of labor unions (Freeman et al. 2015). Concerns about the negative impact of rising income inequality and the shrinking share of the middle class on social cohesion and economic growth (Cingano 2014) have led international organizations such as the IMF, OECD, and World Bank to sound the alarm about rising income inequality and call for "inclusive growth" (OECD 2014).

In parallel with growing income disparity and the shrinking share of the middle class, a growing body of research is accumulating that examines in detail the economic and social roles played by the middle class. In polarized societies with a small middle class, overemphasis on the redistribution of resources between the upper income and the poor groups makes it difficult to reach a consensus in broad decision-making related to economic development. Conversely, it has been demonstrated that if a sizable middle class were present, it would provide sustained support for democracy (Barro 1999), reduce conflicts over the distribution of wealth between the upper income and the poor classes (Benhabib and Przeworski 2006) and social and political instability (Alesina and Perotti 1996), and promote investment in public goods such as education, health care, and infrastructure (Easterly 2001), leading to economic development. It has also been pointed out that middle class ethics emphasize saving and accumulating human capital (patience capital), which contributes to economic growth (Doepke and Zilibotti 2005, 2008). Across the board, developed countries are now paying increasing attention to the middle class as the bearer of moderate democracy and the foundation for economic development of their economies.

In Japan, on the other hand, the accumulation of research on the middle class from an economic perspective is (at least to the best of the authors' knowledge) not always sufficient. Even basic information, such as the proportion of the middle class in Japan and the background factors that change the proportion, is still lacking, although more is becoming available. Given the possibility that boosting the proportion of the middle class will become a policy issue in Japan from the 2020s onward, it is necessary to follow the lead of previous research and somehow define the middle class before accumulating more information on changes in it.

In this study, we will define the middle class based on income information and then identify changes in the proportion of the middle class in Japan's population using microdata from the MHLW's CSLC. We will clarify factors that change the proportion of the middle class from the viewpoints of working status, aging of the population, and redistribution policies.

Based on these analyses, we will examine the direction of policy support necessary to increase the proportion of the middle class. The structure of this article is as follows: Chapter 2 provides an overview of previous research that has formed a picture of the middle class from the perspective of income; Chapter 3 explains the methodology for identifying the middle class and the data used in this study; Chapter 4 presents the results of our analysis; Chapter 5 develops a discussion based in the results; and Chapter 6 discusses future issues.

2. Previous studies

As will be discussed in more detail in the next section (Chapter 3), the middle class is often identified in terms of income. This is because doing so makes it possible to estimate the entire population and obtain reliable survey results. The previous studies discussed in this chapter also define the middle class based on income rather than assets or other information.

Atkinson and Brandolini (2013) use the Luxembourg Income Study (LIS) database to compare the proportion of the middle class in 1985 and 2004 for several countries. The results showed that in 11 of 15 countries, the proportion of the middle class declined, squeezed between the rising proportions of the upper income and the lower income groups. In particular, the proportion of the middle class has fallen significantly in Finland and Sweden while it has risen in Norway, Italy, Denmark, France, and Mexico.

The OECD has published five reports on income inequality since 2008, most notably OECD (2019), which, for the first time, has a special issue on the middle class. Using data from LIS and other sources, it compares the middle class in the mid-1980s and mid-2010s and finds that the proportion of the middle class has declined in 14 of 17 countries. In Sweden, Israel, Finland, Luxembourg and Germany, the share of the middle class has fallen by more than 5 percentage points. Conversely, the proportion is increasing in only three countries (Ireland, Denmark, and France).

Derndorfer and Kranzinger (2021) compare changes in the proportion of the middle class within the EU using 2004 and 2014 data from the EU Statistics on Income and Living Conditions (EU-SILC). Of the 26 EU countries, the proportion of the middle class declined in 18 countries. The most significant decline occurred in Germany (from 48.3% to 38.8%), followed by Sweden (from 50.5% to 43.8%). The proportion of the middle class increased in Poland, Ireland, and France.

Although these three studies differ in terms of the data used, the countries analyzed, and the period covered, they confirm that the proportion of the middle class is trending downward in many countries. Results showing a large decline in the proportion of the middle class in countries such as Germany, Finland, and Sweden and an increase in countries such as France and Denmark are common to several studies.

For Japan, the MHLW (2012) estimates the proportion of the middle class using published data from the "National Survey of Family Income and Expenditure" (hereafter "NSFIE"). Result of this survey have shown that, although the proportion of the middle class did not change significantly between 1999 and 2009, the proportion of the upper income group declined and that of the lower income group increased.

Shinozaki (2015), using published data from the CSLC, shows that the proportion of the middle class declined between 1985 and 2012. During this period, the proportions of the upper income and the lower income groups continuously and gradually increased. He also points out that the proportion of the middle class declined particularly between 1985 and 2000 and has remained relatively stable since 2003. When the range of the middle class in 1985 is fixed as a benchmark, the proportion of the middle class declines until 2012, that of the upper income group peaks around 1997 and then falls, and that of the lower income group bottoms around 1997 and then rises.

Tanaka and Shikata (2019) calculate the proportion of the middle class based on microdata of the NSFIE and find that it declined slightly over the 15 years from 1994 to 2009. They also show that fixing the middle class range benchmark to 1994 results in a larger decline in its proportion in 2009.

Tanaka (2020) calculates the proportion of the middle class based on microdata from the CSLC and, like Shinozaki (2015), shows that the proportion declined over 30 years from 1985 to 2015. Tanaka (2020) also decomposes the change in the proportion of the middle class in terms of age and points out that the aging of the population has increased the proportion of those with lower incomes, which has affected the decline in the proportion of the middle class in the population as a whole.

A point that previous studies on Japan concerning the proportion of the middle class have in common is that the middle class's proportion declined from the 1980s to the end of the 1990s and has remained relatively stable from the 2000s onward. At the same time, there are differences across the studies regarding the results when the middle class range is fixed at a particular year. In addition, there is still a paucity of research on background factors behind the change in the proportion of the middle class. In our analysis in the next chapter, we will attempt to fill in the differences in the results of previous studies and clarify those background factors, especially in terms of working status and the aging of the population.

3. Method and data

3.1 Method

This section describes how we defined "middle class" in this study. Consistent with previous studies, we define the middle class based on income, in particular equivalized household disposable income (hereafter, equivalized disposable income). The middle class is the group whose income falls within a specific range based on the median income as measured by equivalized disposable income.

Specifically, the range of the middle class is defined by the following procedure. Once the middle group is defined, the groups above and below it are defined at the same time. First, the income we focus on in this study is measured at the household level; it is not income from individual-level wages, etc. The income of all household members (income before taxes and social security contributions; i.e., initial income) is added together to obtain the income of the household as a whole. Next, taxes and social insurance contributions are subtracted from this income, and social security benefits such as pensions are added to calculate disposable income at the household level. This household-level disposable income is then divided by the square root of the number of household members to obtain equivalized disposable income. In the following, when the word "income" is used without any specific reference, it basically refers to this equivalized disposable income.

Equivalized disposable income is the disposable income per household member adjusted for household size. This equivalized disposable income is allocated to all household members: in other words, all household members, including non-working household members (e.g. children, housewives), are assigned this information. The equivalized disposable incomes assigned to all citizens are sorted from the lowest to the highest, and the income of those who are exactly in the middle is defined as the median income. The proportion of the middle class is defined as the proportion of the total population of people earning between 75% (0.75 times) and 200% (twice) of the median income.

We also define the upper income group as earning 200% or more of the median income, the lower income group as earning between 50% and 75%, and the poor group as earning less than 50%. There are multiple options for where to set the threshold for each group, and it is crucial to examine not only the 200% threshold for the middle class and the upper income group but also other thresholds, such as 125% and 300% (Atkinson and Brandolini 2013). In fact, the thresholds for middle- and upper-income groups are not consistent across studies, and the results should be interpreted with caution. On the other hand, there is a general consensus among previous studies on the thresholds for the poor and the lower income groups, and the lower income and the middle income groups: 50% and 75%, respectively (Ravallion 2010).[1] The proportion of the poor group among these groups is the relative poverty rate, which is often cited in poverty studies. In this sense, middle class studies based on the methodology used in this study and poverty studies based on the relative poverty rate have the advantage of allowing comparison between each other's results.

3.2 Data description

The data used in this study are microdata from the MHLW's CSLC. The survey was first conducted in 1986, with a large-scale survey conducted every three years and smaller, simplified surveys conducted in each intermediate year. This study utilizes only the large-scale survey; the data period is 33 years, from 1986 to 2019. The income surveyed in the CSLC is income of the year before the survey year; thus, the income data obtained from the 1986 survey, for example, is for income of 1985.

In some previous studies, top coding was used to calculate the proportion of the middle class (Atkinson and Brandolini 2013); however, we do not use that method in this study. In calculating equivalized disposable income, we exclude those with unknown tax and social insurance contributions, as such amounts would make the calculation impossible. When the estimated equivalized disposable income is negative, it is converted to zero. Similar to this study, Tanaka (2020) calculated the proportion of the middle class using the microdata of the CSLC. However, the results differ very slightly because of slight differences in the samples used for the analysis.

4. Results

4.1 Trends in Japan's middle class

Figure 1 shows the proportions of the middle class calculated using the CSLC based on the method described in Section 3.1. It shows the proportion (of the total population) of those earning between 75% and 200% of the median income as measured by equivalized disposable income. Table 1 shows the detailed figures from Figure 1.

The proportion of the middle class declines from 1985 to 2000 and then generally remains within a two-percent point range from 2003 to 2018 (between 2003 and 2018, the lowest is 57.3% in 2009, and the highest is 59.3% in 2003). A closer review of the decline in the proportion of the middle class between 1985 and 2000 shows that the decline is not uniform; there are two periods when the proportion of the middle class declines by more than 2 percentage points over three years. The first is from 1985 (63.9%) to 1988 (60.9%), when it declines by -3.0 percentage points, and the second is from 1997 (60.1%) to 2000 (57.9%), when it declines by -2.2 percentage points. This represents a decline of 5.2 percentage points combined. Since the decline from 1985 to 2000 is 6.0 percentage points, it can be seen that the decline during the two periods accounts for about 85% of the decline from 1985 to 2000.[2]

The decline in the proportion of the middle class implies an increase in the proportion of the poor, the lower income, and the upper income groups outside the middle class. It can be seen that the proportion of the upper-income group increases in both periods, from 1985 to 1988 and from 1997 to 2000, when the proportion of the middle class decreases significantly. Changes in the proportions of lower income groups are relatively small. The proportion of the poor group also increased, but it increased continuously not only during these two periods but also between 1985 and 2000. In other words, from 1985 to 2000, the proportion of the poor group gradually increased while the proportion of the middle class decreased as the proportion of the upper income group increased over a very short period of time.

Would similar results be seen if the middle class range was changed? Figure 2 and Table 2 show the results we obtained when we calculated the proportion of the middle class based on several middle class ranges. Specifically, Figure 2 shows the proportions of those earning between 75% and 125%, between 75% and 150%, between 75% and 167% and between 75% and 300% in addition to the proportion of those earning between 75% and 200% of the median income (the same range as in Figure 1). Following the suggestion of Atkinson and Brandolini (2013), and for the purposes of international comparison with the results of OECD (2019) in later chapters, this study basically uses the proportion of those earning between 75% and 200% of the median income as the proportion of the middle class; however, as Atkinson and Brandolini (2013) point out, it is also essential to check middle class proportions calculated with other methods to verify the robustness of the results.
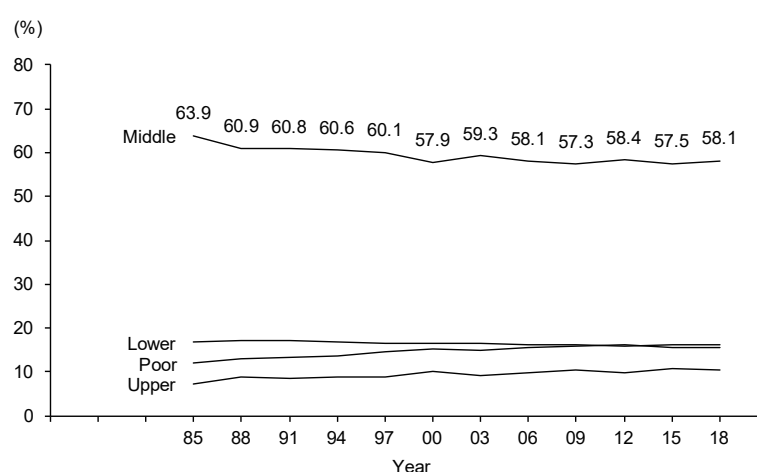
Source: Authors' calculations with microdata from the CSLC, MHLW.
Notes: 1.The middle class is defined based on equivalized household disposable income.
2. The range for each income group is as follows:
　　Poor: less than 50% of the median income
　　Lower: between 50% and 75% of the median income
　　Middle: between 75% and 200% of the median income
　　Upper: 200% or more of the median income

Figure 1. Change in proportion of population by income class in Japan (1985-2018)

Table 1. Change in the middle class (1985-2018)

	1985	1988	1991	1994	1997	2000	2003	2006	2009	2012	2015	2018
												Unit: %
Proportion of population												
Poor	11.9	13.1	13.4	13.8	14.6	15.3	14.9	15.7	16.0	16.1	15.7	15.4
Lower	16.7	17.2	17.3	16.7	16.5	16.6	16.6	16.3	16.2	15.9	16.2	16.1
Middle	63.9	60.9	60.8	60.6	60.1	57.9	59.3	58.1	57.3	58.4	57.5	58.1
Upper	7.4	8.8	8.5	8.9	8.8	10.2	9.3	9.9	10.5	9.7	10.6	10.3
												Unit: Ten thousand yen
Equivalized household disposable income												
50% of the median income	108	114	135	144	149	137	130	127	125	122	122	127
75% of the median income	162	171	203	217	223	206	195	190	187	183	183	190
The median income	216	228	270	289	297	274	260	254	249	244	244	253
200% of the median income	431	455	540	578	595	548	519	508	499	488	489	507

Source: Authors' calculations with microdata from the CSLC, MHLW.
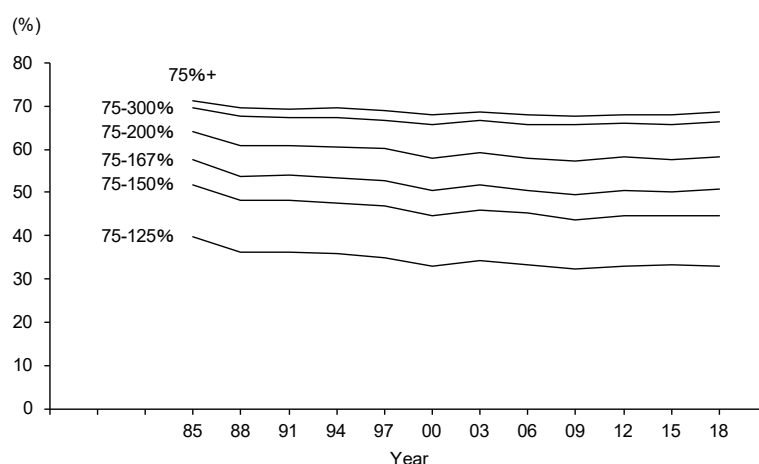*Notes*:1. The middle class is defined based on equivalized household disposable income.
2. The range for each income group is as follows:
　　Poor: less than 50% of the median income
　　Lower: between 50% and 75% of the median income
　　Middle: between 75% and 200% of the median income
　　Upper: 200% or more of the median income

(%)

Source: Authors' calculations with microdata from the CSLC, MHLW.
Notes: 1. The middle class is defined based on equivalized household disposable income.
2. The income ranges of the middle class are as follows:
    75-125%: between 75% and 125% of the median income
    75-150%: between 75% and 150% of the median income
    75-167%: between 75% and 167% of the median income
    75-200%: between 75% and 200% of the median income (the same range as Figure 1)
    75-300%: between 75% and 300% of the median income
3. The range of middle + upper-income groups is as follows:
    75%+: 75% or more of the median income

Figure 2. Change in proportion of population by income class for different income ranges

Table 2. Change in the middle class for different income cut-offs (1985-2018)

	1985	1988	1991	1994	1997	2000	2003	2006	2009	2012	2015	2018
												Unit: %
Proportion of population												
75-125%	39.9	36.3	36.2	35.8	35.0	32.9	34.4	33.4	32.3	33.0	33.3	32.9
75-150%	51.9	48.2	48.3	47.6	46.9	44.7	46.0	45.2	43.7	44.6	44.5	44.7
75-167%	57.6	53.8	54.0	53.4	52.9	50.4	51.7	50.6	49.5	50.5	50.2	50.6
75-200%	63.9	60.9	60.8	60.6	60.1	57.9	59.3	58.1	57.3	58.4	57.5	58.1
75-300%	69.7	67.6	67.3	67.5	66.8	65.7	66.7	65.8	65.6	66.0	65.7	66.4
75%	71.4	69.6	69.3	69.5	68.9	68.1	68.5	68.0	67.8	68.0	68.1	68.5
												Unit: ten thousand yen
Equivalized household disposable income												
75% of the median income	162	171	203	217	223	206	195	190	187	183	183	190
The median income	216	228	270	289	297	274	260	254	249	244	244	253
125% of the median income	269	285	338	361	372	343	324	317	312	305	305	317
167% of the median income	360	380	451	482	497	458	433	424	417	408	408	423
200% of the median income	431	455	540	578	595	548	519	508	499	488	489	507
300% of the median income	647	683	810	866	892	823	779	762	748	732	733	760

Source: Authors' calculations with microdata from the CSLC, MHLW.
Notes: 1. The middle class is defined based on equivalized household disposable income.
2. The income ranges of the middle class are as follows:
    75-125%: between 75% and 125% of the median income
    75-150%: between 75% and 150% of the median income
    75-167%: between 75% and 167% of the median income
    75-200%: between 75% and 200% of the median income (the same range as Figure 1)
    75-300%: between 75% and 300% of the median income
3. The range of middle + upper-income group is as follows:
    75%+: 75% or more of the median income

Figure 2 shows that, regardless of which middle class range is used, relatively large declines in the proportion of the middle class occurred from 1985 to 1988 and from 1997 to 2000. It can also be seen that the proportion of the middle class rose and fell at the same time for periods other than the above two periods. In addition, the proportion of the middle class declined until 2000 and fluctuated within a certain range from 2003. It can be seen that the trend in the proportion of the middle class is not significantly affected by the setting of the middle class range.

Table 2 shows not only the middle class proportion but also the total proportions of the middle + upper income groups. Specifically, it depicts the proportion of those earning at least 75% of the median income as measured by equivalized disposable income. This figure focuses on the proportion of those earning above a certain income level as measured by equivalized disposable income. It shows that the proportion decreased by 3.3 percentage points from 1985 to 2000 and by 2.9 percentage points from 1985 to 2018.

The decline in the proportion of the middle + upper income group means an increase in the poor + lower income group, which means that the proportion of those below the middle class increased from 1985 to 2018. In addition, the increase in the proportion of the poor + lower income group is smaller than the decrease in the middle class, indicating that the proportion of the upper income group above the middle class increased from 1985 to 2018 (this is evident in Table 1).

4.2 Trends in the middle class (fixing the range of the middle class in a given year)

In the analysis in the previous section, we calculated the proportion of the middle class for each year and conducted time series comparisons after fixing the middle class range based on the median income in each year. Making time-series comparisons of the proportion of the middle class calculated in this way presents no particular problems if the value of median income does not change much over the medium to long term. However, if the value of median income changes significantly due to medium to long-term structural changes in economic activity or the effects of short-term macro shocks, time-series comparisons of the proportion of the middle class should be conducted with some caution. Suppose, for example, that a large decline in median income occurs between two-time points. If this decline in median income is caused by a compression of the entire income distribution toward zero, the proportion of the middle class may rise because more of the population is concentrated around the median income level. However, one must be cautious in interpreting this increase in the middle class proportion as an improvement in the situation of the middle class. This is because, under these circumstances, the incomes of many people, including those in the middle class, would be declining.

Derndorfer and Kranzinger (2021) point out that it is also important to anchor the middle class in a given year in countries that have experienced large declines in economic activity. Japan also experienced relatively large fluctuations in economic activity from the 1980s to the 2010s. In this section, we will examine the results of time-series comparisons of the proportion of the middle class in other years after fixing the middle income and the middle class ranges for a given year. Similar tests have been conducted using microdata from the NSFIE (Tanaka and Shikata 2019) or the CSLC (Tanaka 2020) and have reported different trends in the proportion of the middle class with and without fixation. In light of these studies, we set multiple years to be fixed and check whether the transition in the proportion of the middle class differs depending on the different years as an additional work in this section.

Panel A of Figure 3 shows the results we obtained by calculating the proportion of the middle class in each year after applying the 1985 middle class range to the other years (price changes have been adjusted separately). Panels B and C show the middle class proportion in each year after applying the 1997 and 2018 middle class ranges, respectively, to other years. The years 1985 and 2018 are the first and the last years for which the microdata of the CSLC are available. The year 1997 has the highest median income, as Table 1 shows. The proportion of the middle class is, as in the previous section, the proportion of those earning between 75% and

200% of median income, measured by equivalized disposable income.

Panels A and C in Figure 3 show similar results for changes in the proportion of the middle class. However, there are some differences from Figure 1. The middle class has continued to shrink not only between 1985 and 2000, but also between 2003 and 2018. In addition, the proportion of the upper-income group has been rising once, peaking in 1997 and then declining. Conversely, the proportion of the poor + lower-income groups initially declined, bottomed out in 1997, and began to increase. Although these two panels and Figure 1 share the same point of view that the proportion of the middle class fell by about 6 percentage points between 1985 and 2018, they show different trends concerning the proportion of the middle class and the proportion of the poor, the lower income, and the upper income groups during that period.

Panel B of Figure 3 shows considerably different information from Panels A and C of Figure 3 or Figure 1. In Panel B of Figure 3, the proportion of the middle class rose from 1985 to 1994 or 1997 and then continued to decline consistently through 2015. The decline in the proportion of the middle class from 1997 to 2015 is 9.8 percentage points, which is about the same as the decline in the proportion of the middle class in Figure 1 and Panels A and C of Figure 3. This is larger than the decline of about 6 percentage points from 1985 to 2018. Panel B of Figure 3 shows whether or not the middle class range is fixed in a given year—and if so, when the year fixing the range of the middle class is established—significantly affects the time series trend in the proportion of the middle class.
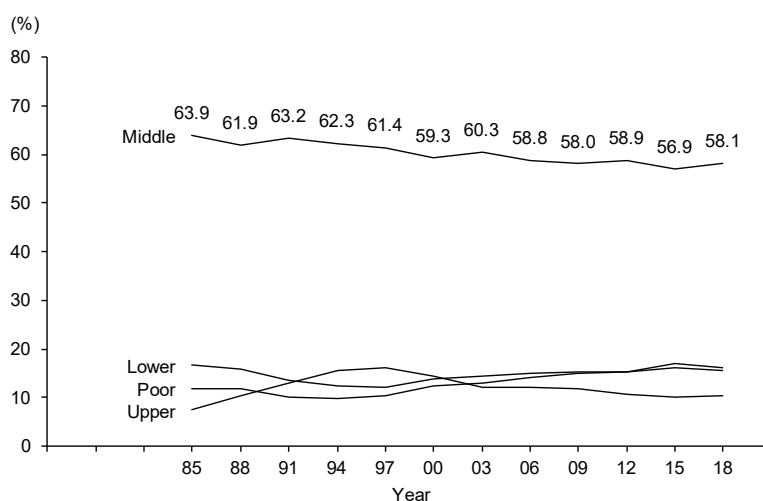
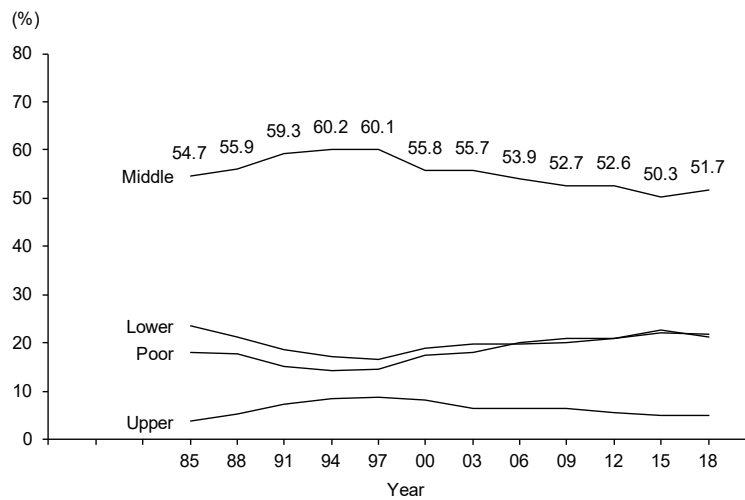*Source*: Authors' calculations with microdata from the CSLC, MHLW.
Notes: 1. The middle class is defined based on equivalized household disposable income.
2. The range for each income group is as follows:
　　Poor: less than 50% of the 1985 median income
　　Lower: between 50% and 75% of the 1985 median income
　　Middle: between 75% and 200% of the 1985 median income
　　Upper: 200% or more of the 1985 median income
3. Equivalized household disposable income was adjusted to the prices in the year in 1985.

Figure 3. Change in proportion of the middle class with a fixed range
Panel A) Based on the 1985 middle class range

Figure 3. (Cont.) Change in proportion of the middle class with a fixed range
Panel B) Based on the 1997 middle class range

Figure 3. (Cont.)
Panel C) Based on the 2018 middle class range

4.3 Japan's middle class from an international comparison

In this section, we describe the characteristics of Japan's middle class by comparing the result obtained in the analysis of the previous section with research in other countries. While there are several prior studies on the proportion of the middle class in other countries, we use the information provided by OECD (2019) in the following. We decided to use OECD (2019) in our comparison because the average figures for OECD member countries are available, the information is not biased toward only certain regions (e.g., only Europe), and figures are available through the mid-2010s.

As in this study, the proportion of the middle class in OECD (2019) is calculated as the proportion of those earning between 75% and 200% of the median income as measured by equivalized disposable income. The method used to calculate equivalized disposable income is also the same (household-level disposable income / √number of household members). Therefore, the results of this study can be directly compared with the information provided by OECD (2019). Figure 4 shows the proportions of the poor, the lower income, the middle income, and the upper income groups in Japan and other countries in the mid-2010s. OECD (2019) provides figures for the proportion of the middle class for a total of 40 countries, of which information for four (the United States, the United Kingdom, Germany, and France) and the OECD average are shown in Figure 4.

Figure 4 also shows information on the proportion of the middle class in Japan as of 2009 taken from OECD (2019) (the graph with the series name "Japan 2009 NSFIE"). The figures for Japan as collected by OECD (2019) are calculated using microdata from the NSFIE. The figures for Japan in OECD (2019) are based on Tanaka and Shikata (2019). The NSFIE is characterized by a smaller sample with lower incomes than the CSLC (Cabinet Office 2015). Therefore, when the proportion of the poor group is calculated using the NSFIE, it is smaller than that calculated using the CSLC (Cabinet Office 2015). Since the proportion of the poor group is smaller using the NSFIE, the proportion of the middle class is expected to be larger using the NSFIE than when

Source: Left-side figures for the OECD average, the United States, the United Kingdom, Germany, France, and Japan are taken from OECD (2019), Figure 2.1. The OECD average is the average for 35 OECD countries. The values for Japan are calculated from the NSFIE, MIC. The right-side figures (for Japan) are calculated by the authors with microdata from the CSLC, MHLW.
Notes: 1. Each group is defined based on equivalized household disposable income.
2. The range for each income group is as follows:
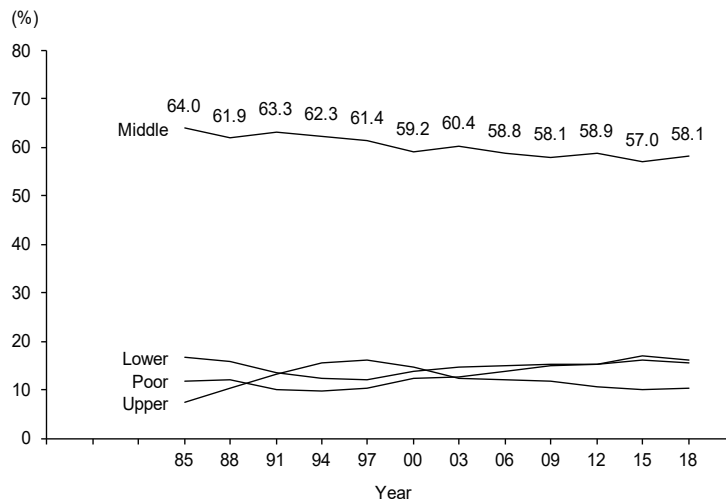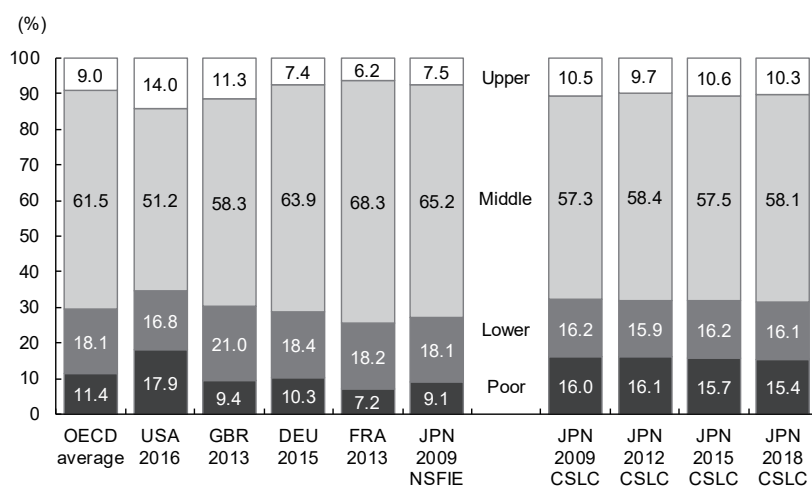   Poor: less than 50% of the median income
    Lower: between 50% and 75% of the median income
    Middle: between 75% and 200% of the median income
    Upper: 200% or more of the median income

Figure 4. International comparison of the middle class (mid-2010s)

using the CSLC.

The difference between the figures for the proportion of the poor group and the middle class based on the NSFIE or the CSLC will be discussed again in later sections. It should be noted, however, that there is a divergence between the figures for the proportion of the poor group in Japan from Tanaka and Shikata (2019), those as collected by OECD (2019), and other information provided by the OECD, such as the relative poverty rate for Japan shown in OECD (2015) and the Income Distribution Database (IDD) of OECD Statistics on the web (equal to the proportion of the poor group in this study). The relative poverty rates for Japan shown in the OECD report and the IDD are calculated using the CSLC, so they naturally deviate from the results based on the NSFIE. On the other hand, for other countries, the figures for the proportion of the poor group given by OECD (2019) and the relative poverty rates given by other OECD reports and the IDD are generally consistent, given that, as noted in Section 3.1, the proportion of the middle class and the relative poverty rate figures are figures measured on the same yardstick. Calculating the figures for the middle class and the proportion of the poor group for Japan based on the CSLC has significance in that the figures are obtained in a manner consistent with the relative poverty rates (proportions of the poor group) presented in other OECD reports and by the IDD. In Figure 4, the graphs with the series name "CSLC" contain figures calculated in this study and are specifically consistent with the values shown in Figure 1 and Table 1. Figure 4 shows that the average proportion of the middle class in the 35 OECD countries in the mid-2010s is 61.5%, which is smaller than Japan's figure based on the NSFIE (65.2%, the figure for 2009) but larger than the figure based on the CSLC (57.5%, the figure for 2015). This indicates that determination of the size of Japan's middle class may differ depending on whether it is based on NSFIE or CSLC data.

Checking the figures by country, the smallest proportion of the middle class among the four countries cited is the United States (51.2%), while the largest is France (68.3%). Based on the NSFIE the proportion of the middle class in Japan is close to France and larger than the other three countries. Based on the CSLC, the proportion of the middle class in Japan is smaller than that of France and Germany, close to the United Kingdom (58.3%), and larger than the United States. Japan's middle class proportion is neither extremely large nor extremely small compared to other countries, but whether it falls into a group with a larger proportion of the middle class compared to other countries depends on the statistics used.

Figure 5 shows, by country, the extent to which the proportion of the middle class has changed over the approximately 30-year period from the mid-1980s to the mid-2010s. The same four countries cited in Figure 4 and the OECD average are taken from OECD (2019). Panel A of Figure 5 shows that over the above 30-year period, the average of the 17 OECD countries saw a 2.6 percentage point decline in the proportion of the middle class and an increase in the proportion of the poor + lower income and the upper income groups. Similarly, in Japan, a decline in the proportion of the middle class and increases in the proportions of the poor + lower income and the upper-income groups have occurred, but the decline in the proportion of the middle class is larger than the OECD average. Among the four countries cited, the United States, the United Kingdom, and Germany have experienced a similar decline in the proportion of the middle class as Japan. However, the declines in all four countries are smaller than that in Japan. In OECD (2019), the countries experiencing a similar or larger decline than Japan are Finland (-5.8 percentage points), Israel (-6.7 percentage points), and Sweden (-7.4 percentage points).

Panel B of Figure 5 breaks down the 30-year changes shown in Panel A of Figure 5 into decadal changes. As can be seen from the trends in the proportion of the middle class shown in Figure 1, most of the 30-year change in the proportion of the middle class in Japan occurred from the 1980s to the 2000s. However, from the 2000s to the 2010s, the decline in the proportion of the middle class in Japan and the average of the 17 OECD countries is about the same.
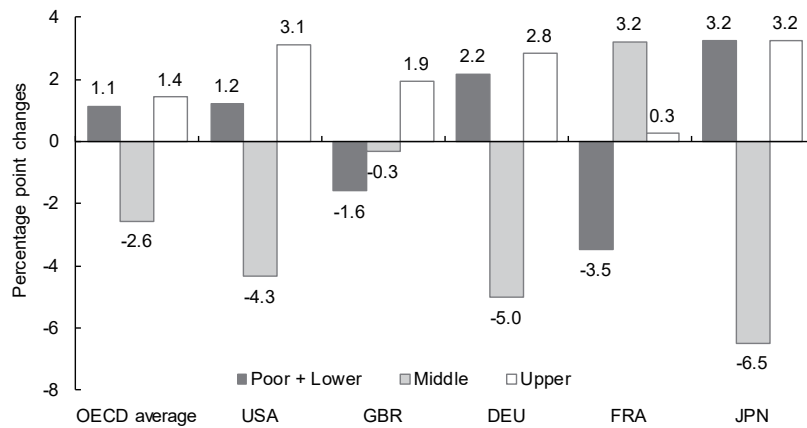
Source: Figures for OECD average, the United States, the United Kingdom, Germany, and France are cited from OECD (2019), Figure 2.4. The OECD average is the average for 17 OECD countries. Values for Japan are the results of calculations by the authors performed with microdata from the CSLC, MHLW.
Notes: 1. The middle class is defined based on equivalized household disposable income.
2. The ranges of the poor + lower-income, middle-income and upper-income groups are as follows:
　　Poor + Lower: less than 75% of the median income
　　Middle: between 75% and 200% of the median income
　　Upper: 200% or more of the median income

Figure 5. International comparison of change in proportion of population by income class (mid-1980s to mid-2010s)
Panel A) Change by income class
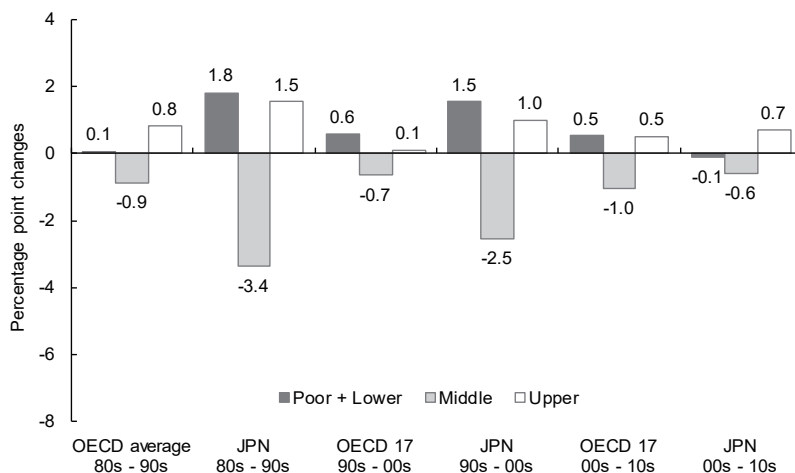
Source: The OECD average is the average for 17 OECD countries cited from OECD (2019), Figure 2.4. Figures for Japan are the results of calculations by the authors performed with microdata from the CSLC, MHLW.
Notes: 1. The middle class is defined based on equivalized household disposable income.
2. The ranges of the poor + lower-income, middle- income and upper-income groups are as follows:
　　Poor + Lower: less than 75% of the median income
　　Middle: between 75% and 200% of the median income
　　Upper: 200% or more of the median income
3. The details of the years are as follows:
　　80s - 90s: Changes from the mid-1980s to the mid-1990s; for Japan, from 1985 to 1994
　　90s - 00s: Change from the mid-1990s to the mid-2000s; for Japan, from 1994 to 2006
　　00s - 10s: Change from the mid-2000s to the mid-2010s; for Japan, from 2006 to 2015

Figure 5. (Cont.)
Panel B) Change by decade

4.4 Relationship between working status, aging, and the middle class

When the proportion of the middle class declines and the proportion of the poor, the lower income, and the upper-income groups rises—that is, when the proportion of those with lower or upper-incomes as measured by equivalized disposable income increases—there are multiple factors behind these changes that affect income fluctuations. Typical factors alone include changes in labor income (due to the impact of technological innovation, economic fluctuations, etc.), changes associated with the aging of the population (due to decrease in the number of workers and increase in the number of retirees heavily dependent on social security benefits such as pensions, etc.), and changes in household composition (due to shift to nuclear families, increase in single-person households, changes in the number of children in the household, etc.).

Regarding changes in labor income, Yokoyama and Kodama (2019) used microdata from the MHLW's *Basic Survey on Wage Structure* and applied the Firpo, Fortin, and Lemieux (FFL) decomposition to examine wage fluctuations in the middle class. The results show that the wage decline for male employees in the middle class is due to a decrease in the return on years of experience and that an increase in the number of non-regular workers, such as part-time workers, causes the wage decline for female employees. Regarding the aging of the population, it is shown that the proportion of the middle class is lower among those aged 65 and over than among those under 65 (Tanaka and Shikata 2019, Tanaka 2020), the aging of the population from the 1980s to the 2010s exerted downward pressure on the proportion of the middle class, and from the 1980s to the 1990s, the proportion of the middle class declined among the elderly and the young and middle age, respectively (Tanaka 2020). As for the relationship with family structure, it has been shown that the proportion of the middle class is higher among married-couple households without children and among married-couple households with children than among other household types (Tanaka and Shikata 2019).

In this section, we categorize households based on several factors and examine changes in the proportion of the middle class for each household type based on the results of previous studies. Specifically, we calculate the proportion of the middle class for each of 14 household types, which are created by combining four factors: the age of the household head, the number of adults (household members aged 18 or older) in the household, the presence of children (household members aged under 18), and the number of persons working. We then identify the characteristics of each household type with respect to the middle class and compare changes in the proportion of the middle class over time. This study is unique in that it uses household typologies created by combining these elements rather than creating household typologies using each element individually, as in previous studies.

The 14 household types used in this section are those presented by OECD (2017). The 14 household types are divided into two categories based on whether the head of the household is elderly (at retirement age) or not and further divided based on the number of adults in the household, the presence of children, and the number of persons working.[3] The two categories and 14 specific household types are as follows.

Households with a head of non-retirement age (18-64)
    Household Type 1: Single adult, no children, working
    Household Type 2: Single adult, no children, not working
    Household Type 3: Single adult, with children, working
    Household Type 4: Single adult, with children, not working
    Household Type 5: Two or more adults, no children, at least two working
    Household Type 6: Two or more adults, no children, one working
    Household Type 7: Two or more adults, no children, none working
    Household Type 8: Two or more adults, with children, at least two working
    Household Type 9: Two or more adults, with children, one working
    Household Type 10: Two or more adults, with children, none working

Households with a head of retirement age (65 and over)
   Household Type 11: Single person, working
   Household Type 12: Single person, not working
   Household Type 13: Two or more persons, at least one working
   Household Type 14: Two or more persons, none working

OECD (2017)'s household classification is intended for use in analyses of income inequality and poverty. It therefore takes a form whereby households consisting of a single parent and children, for example, which have a somewhat minor presence in terms of overall numbers and which are often the subject of consideration in studies of poverty, become one of 14 household types. Given that the main source of income for many non-retired households is labor income, the study is also designed to examine how poverty and inequality status change depending on whether or not the household is working and how many people in it are working.
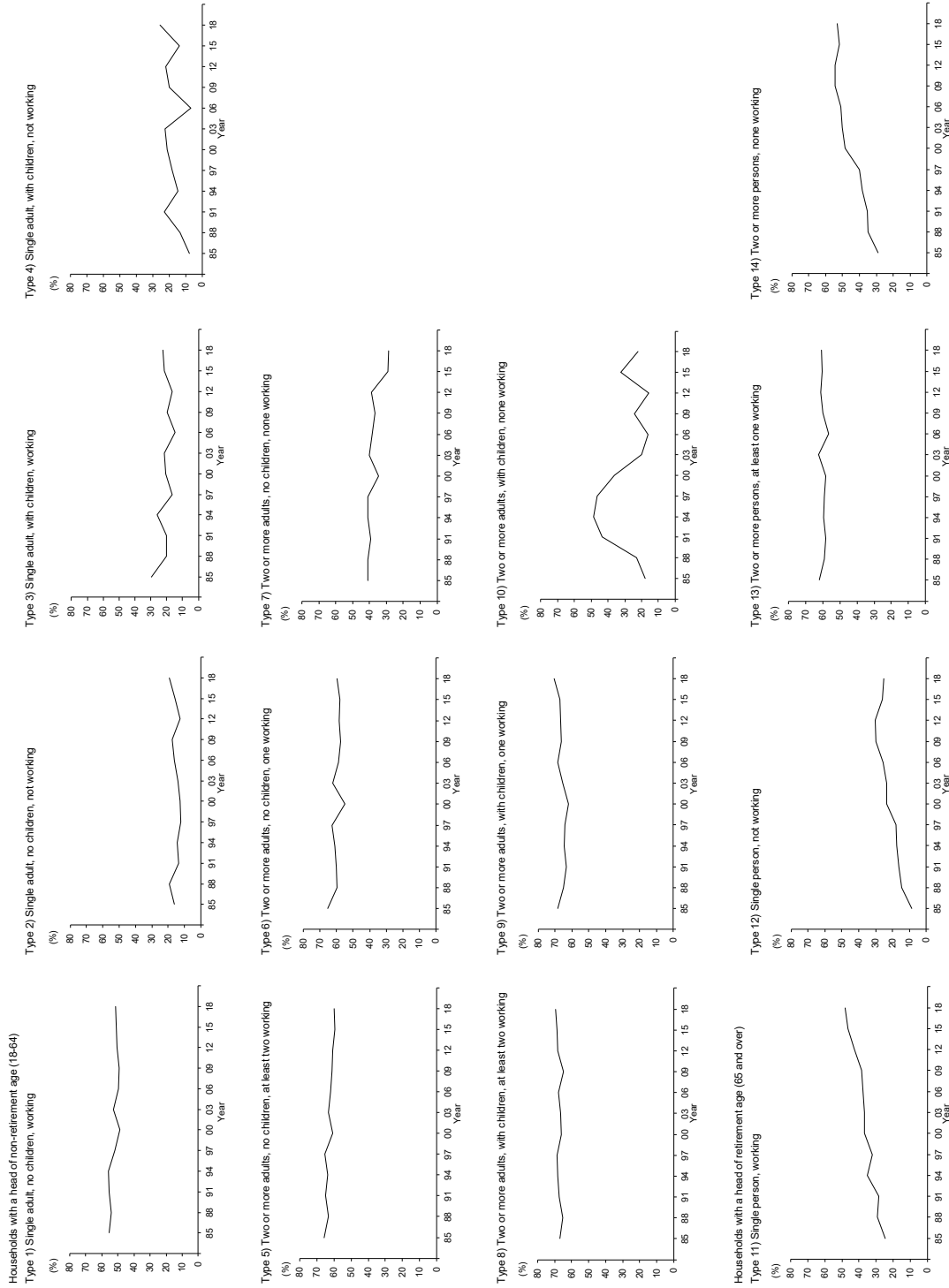
It should be noted that in using this household typology that the age information applies only to the head of the household and to the distinction between adults and children. For example, a household consisting of a 70-year-old female head of household who was widowed by her husband and a 40-year-old unmarried child who is not working would be classified as Household Type 14 in the above household categories. Of course, a typical example of 14 household types would be a retired couple with a head of household over 65 years old. However, this household type also includes somewhat irregular case of the kind described above. Such irregularities can be avoided when creating age categories based on individuals' ages, as is done in Tanaka and Shikata (2019) and Tanaka (2020). However, given that equivalized disposable income, which is normally used in studies of the middle class, income inequality, and poverty, is calculated based on households, not individuals, it may also be useful to create age groups based on the ages of heads of the household rather than individuals.

Figure 6 shows the proportion change in the middle class calculated for each of the 14 household types described above. At first glance, it can be seen that, when other factors are equal, households with a worker have a higher proportion of the middle class than households without a worker. The exception is households with one adult and children, in which there appears to be no difference in the proportion of the middle class depending on whether there is a working person or not. Comparing Household Types 5 and 6 (two or more adults with no children as common factors) and 8 and 9 (two or more adults with children as common factors) in terms of the number of workers, the proportion of the middle class is slightly higher among households with two or more workers than among households with one worker; however, the difference is not significant.

Generally, for households with a head aged 18-64, the middle class proportion remained almost the same or declined gradually between 1985 and 2018. In contrast, for households with a head aged 65 or older, we can see cases in which the middle class proportion tended to increase between 1985 and 2018 (e.g., Household Types 11, 12, and 14). With such a rise in the proportion of the middle class in some household categories, one might expect that the proportion of the middle class in the population as a whole would also rise, but in fact, as seen in Figure 1, the proportion of the middle class is on a declining trend over the medium to long term.

To ensure consistency between Figures 6 and 1, Figure 7 shows the share of the population belonging to each of the 14 household types in the total population. The shares of Household Types 5, 6, 8, 9, 13, and 14 are large while those of the other household types is only about 5% at most. Changes in the share of the middle class in the population as a whole are expected to depend largely on changes in the proportion of the middle class in the six household types described above, as well as on changes in the shares of the six household types.

The shares of Household Types 5, 6, 8, and 9, where the age of the head of the household is 18-65, have been declining over the medium to long term; in particular, the shares of Household Types 8 and 9 (two or more adults, with children, at least one working) have declined significantly between 1985 and 2018. As Figure 6 shows, the share of the middle class in Household Types 8 and 9 is higher than the share of the middle class in the population

Households with a head of non-retirement age (18-64)

Type 1) Single adult, no children, working

Type 2) Single adult, no children, not working

Type 3) Single adult, with children, working

Type 4) Single adult, with children, not working

Type 5) Two or more adults, no children, at least two working

Type 6) Two or more adults, no children, one working

Type 7) Two or more adults, no children, none working

Type 8) Two or more adults, with children, at least two working

Type 9) Two or more adults, with children, one working

Type 10) Two or more adults, with children, none working

Households with a head of retirement age (65 and over)

Type 11) Single person, working

Type 12) Single person, not working

Type 13) Two or more persons, at least one working

Type 14) Two or more persons, none working

Source: Authors' calculations with microdata from the CSLC, MHLW.
Notes: 1. The middle class is defined based on equivalized household disposable income.
2. The range of the middle class is 75% to less than 200% of the median income.

Figure 6. Change in proportion of the middle class by household type

Households with a head of non-retirement age (18-64)

Type 1) Single adult, no children, working

Type 2) Single adult, no children, not working

Type 3) Single adult, with children, working

Type 4) Single adult, with children, not working

Type 5) Two or more adults, no children, at least two working

Type 6) Two or more adults, no children, one working

Type 7) Two or more adults, no children, none working

Type 8) Two or more adults, with children, at least two working

Type 9) Two or more adults, with children, one working

Type 10) Two or more adults, with children, none working

Households with a head of retirement age (65 and over)

Type 11) Single person, working

Type 12) Single person, not working

Type 13) Two or more persons, at least one working

Type 14) Two or more persons, none working

Source: Authors' calculations with microdata from the CSLC, MHLW.

Figure 7. Change in share of each household type

as a whole, but the decline in the share of these households has put downward pressure on the proportion of the middle class in the population as a whole. On the other hand, Figure 6 shows that the share of the middle class in Household Type 13 (two or more adults, at least one working) is slightly lower than that of the population as a whole, while the share of the middle class in Household Type 14 (two or more adults, none working) is rising but still at a level lower than that of the middle class in the population as a whole. The increase in the share of Household Types 13 and 14 will put downward pressure on the middle class proportion in the population as a whole.

We use a simple decomposition to organize the effects of changes in the proportion of the middle class within each household type and changes in the share of each household type on changes in the proportion of the middle class in the population as a whole. Specifically, we decompose the change in the proportion of the middle class in the population as a whole across different time points into two effects: the effect of the change in the proportion of the middle class within each household type and the effect of the change in the share of each household type. For the proportion of the middle class R_t in year t, the change $\Delta R = R_{2018} - R_{1985}$ from 1985 to 2018 can be decomposed as

$$\Delta R = \sum_i (\Delta r_i \times \overline{s_i}) + \sum_i (\overline{r_i} \times \Delta s_i)$$

Here, r_i and s_i represent the proportion of the middle class within each household type and the share of each household type, respectively. Also, Δ is the operator representing the difference in the change from 1985 to 2018, and the superscript bar (‾) represents the average value of the variable between 1985 and 2018. Thus, the first term on the right-hand side of the above equation represents the effect of the change in the share of the middle class among each household type, and the second term represents the effect of the change in the share of each household type.

Table 3 shows the results of decomposing the proportion of the middle class based on the above equation. The -5.8-percentage-point change in the proportion of the middle class in the total population between 1985 and 2018 is the result of a 1.5-percentage-point change in the proportion of the middle class within each household type (the effect of the first term in the equation above) offset by a -7.0-percentage-point change in the share of each household type (the effect of the second term in the equation). Note that the sum of the two effects deviates slightly from -5.8 percentage points due to rounding errors in the decomposition results.

The effect of the change in the proportion of the middle class is particularly large for Household Type 14, as seen in Figure 6. The effect of the change in the share of each household type is particularly large for Household Type 9. In Figure 7, the share of Household Type 9 declined significantly from 26.1% in 1985 to 7.2% in 2018. Although the proportion of the middle class in this household type (two or more adults, with children, one working) is higher than the share of the middle class in the population as a whole, the sharp drop in share has a negative effect on the proportion of the middle class in the population as a whole. Including this negative effect of Household Type 9 (-13.1 percentage points), a large negative share effect of -21.0 percentage points is recorded for the entire household head aged 18-64. On the other hand, for all households whose head is aged 65 and over, the share effect is significantly positive at 14.1 percentage points. The effect of the change in share for each household type seen earlier (-7.05 percentage points) is caused by this negative effect of -21.0 percentage points offset by a positive effect of 14.1 percentage points.

4.5 Relationship between redistribution and the middle class

Finally, we use this section to briefly review the impact of redistribution through taxes and social security on the proportion of the middle class. Derndorfer and Kranzinger (2021) examine 26 European countries, calculating the extent to which the proportion of the middle class changed before and after redistribution through taxes and social security and then examining whether the change increased or decreased from the mid-2000s to the mid-2010s for each country. The results show that in many European countries, the proportion of the middle class

Table 3. Decomposition of change in proportion of the middle class

	Proportion of the middle class %		Share of household types %		Change in proportion	Change in share	Effect of proportion change	Effect of share change
	1985	2018	1985	2018	85 -> 18	85 -> 18	85 -> 18	85 -> 18
All households	63.9	58.1			-5.8		1.5	-7.0
Households with a head of non-retirement age (18-64)	65.5	62.0	86.8	56.9	-3.5	-29.9	-0.5	-21.0
Type 1) Single adult, no children, working	55.3	51.2	1.8	4.1	-4.1	2.3	-0.1	1.2
Type 2) Single adult, no children, not working	16.4	19.3	0.7	0.7	2.9	0.0	0.0	0.0
Type 3) Single adult, with children, working	29.8	22.6	0.7	1.3	-7.3	0.6	-0.1	0.2
Type 4) Single adult, with children, not working	7.6	25.6	0.2	0.1	18.0	-0.1	0.0	0.0
Type 5) Two or more adults, no children, at least two working	65.6	59.9	17.9	17.5	-5.7	-0.5	-1.0	-0.3
Type 6) Two or more adults, no children, one working	65.2	60.0	6.8	5.5	-5.3	-1.3	-0.3	-0.8
Type 7) Two or more adults, no children, none working	41.1	28.5	0.9	0.7	-12.6	-0.3	-0.1	-0.1
Type 8) Two or more adults, with children, at least two working	66.8	69.6	31.5	19.6	2.8	-11.9	0.7	-8.1
Type 9) Two or more adults, with children, one working	68.5	70.4	26.1	7.2	1.9	-18.9	0.3	-13.1
Type 10) Two or more adults, with children, none working	17.9	22.0	0.2	0.2	4.0	0.0	0.0	0.0
Households with a head of retirement age (65 and over)	53.9	54.0	13.2	43.1	0.0	29.9	2.1	14.1
Type 11) Single person, working	24.5	48.3	0.2	1.7	23.9	1.4	0.2	0.5
Type 12) Single person, not working	8.7	25.2	0.8	5.2	16.5	4.4	0.5	0.7
Type 13) Two or more persons, at least one working	62.0	60.8	10.5	24.8	-1.2	14.3	-0.2	8.8
Type 14) Two or more persons, none working	29.0	53.0	1.7	11.4	24.0	9.7	1.6	4.0

Source: Authors' calculations with microdata from the CSLC, MHLW.
Notes: 1. The middle class is defined based on equivalized household disposable income.
2. The range of the middle class is 75% to less than 200% of the median income.

increased after redistribution through taxes and social security, and that in 16 of the 26 countries, the increase in the proportion of the middle class after redistribution was greater in the mid-2010s than in the mid-2000s. Ohno et al. (2021) show that the proportion of the middle class increased after tax and social security redistribution in many European countries, and in 16 of the 26 countries, the increase in the share of the middle class after redistribution was larger in the mid-2010s than in the mid-2000s. Ohno et al. (2021), after applying the same work as Derndorfer and Kranzinger (2021) to microdata from the NSFIE, show that the increase in the middle class after redistribution was greater in the mid-2010s than in the late 1980s. In this section, we apply the methods of Derndorfer and Kranzinger (2021) and Ohno et al. (2021) to the data in the CSLC to see how the proportion of the middle class changes before and after redistribution through taxes and social security and whether the effect of change due to redistribution was different between 1985 and 2018.

In calculating the proportion of the middle class before redistribution through taxes and social security, it is necessary to define the income used in the calculation. As income before redistribution, Derndorfer and Kranzinger (2021) use equivalized factor income, which is factor income divided by the root of the number of persons in the household. Factor income, as used by Derndorfer and Kranzinger (2021), is the sum of compensation of employees, private pensions, business income, property income, and remittances; in other words, it is income before taxes and social insurance contributions and before social security benefits. In the CSLC, factor income, as defined by Derndorfer and Kranzinger (2021), is referred to as "initial income.[4]" In this section, we use equivalized initial income obtained by dividing this initial income by the root of the number of household members as the income before redistribution. We then define the proportion of those earning between 75% and 200% of the median income (as a proportion of the total population) as measured by this equivalized initial income as the proportion of the middle class before redistribution.

Table 4 shows 1985 and 2018 figures for the proportion of the middle class measured by equivalized initial

income and the proportion of the middle class measured by equivalized disposable income. We calculated the proportion of the middle class for each of the 14 household types used in the previous section. In the table, looking first at the figures for the population as a whole (the row of "Total household types"), the proportion of the middle class after the redistribution is higher than that before the redistribution, with the proportion of the middle class increasing by 6.6 percentage points in 1985 and by 12.6 percentage points in 2018. By household type, the proportion of the middle class is higher after redistribution for most household types. In addition, for the population as a whole, the incremental increase in the proportion of the middle class before and after redistribution is larger in 2018 than in 1985, and similar results can be seen in the data of the CSLC for the 16 countries in Derndorfer and Kranzinger (2021) and Ohno et al. (2021).

However, Table 4 shows that the higher proportion of the middle class after the redistribution in 2018 is due to the larger effect in the category of households whose head is aged 65 or over. For the category of households with a head aged 65 or older, the change in the proportion of the middle class before and after redistribution is 15.7 percentage points in 1985 and 26.2 percentage points in 2018, with a larger increase in the proportion of the middle class after redistribution in 2018. In contrast, for the category of households with a head aged 18-64, the change in the proportion of the middle class before and after redistribution is 5.0 percentage points in 1985 and 3.3 percentage points in 2018, with a smaller increase of 1.7 percentage points in the proportion of the middle class after redistribution in 2018. As seen in the previous section, Household Types 5, 6, 8, and 9 have the largest shares of the total population among household types with a head aged 18-64, but in Household Types 6, 8, and 9, the increase in the share of the middle class after redistribution is smaller in 2018 than in 1985. This is the reason why the increase in the proportion of the redistributed middle class is smaller in 2018 than in the previous years.

Table 4. Change in proportion of the middle class before and after redistribution

	Proportion of the middle class 1985 %		Proportion of the middle class 2018 %		Difference % point		Change of difference % point
	Initial income a	Disposable income b	Initial income c	Disposable income d	1985 e = b - a	2018 f = d - c	85 -> 18 f - e
All households	57.3	63.9	45.6	58.1	6.6	12.6	6.0
Households with a head of non-retirement age (18-64)	60.5	65.5	58.7	62.0	5.0	3.3	-1.7
Type 1) Single adult, no children, working	51.3	55.3	52.4	51.2	4.0	-1.2	-5.2
Type 2) Single adult, no children, not working	15.5	16.4	15.5	19.3	0.9	3.7	2.8
Type 3) Single adult, with children, working	25.8	29.8	23.1	22.6	4.0	-0.5	-4.5
Type 4) Single adult, with children, not working	7.9	7.6	20.4	25.6	-0.3	5.2	5.5
Type 5) Two or more adults, no children, at least two working	58.2	65.6	51.6	59.9	7.5	8.3	0.8
Type 6) Two or more adults, no children, one working	52.2	65.2	51.6	60.0	13.0	8.4	-4.7
Type 7) Two or more adults, no children, none working	19.9	41.1	14.8	28.5	21.2	13.7	-7.5
Type 8) Two or more adults, with children, at least two working	63.0	66.8	67.3	69.6	3.8	2.3	-1.5
Type 9) Two or more adults, with children, one working	66.6	68.5	71.3	70.4	1.9	-0.9	-2.8
Type 10) Two or more adults, with children, none working	9.1	17.9	17.1	22.0	8.9	4.9	-4.0
Households with a head of retirement age (65 and over)	38.3	53.9	27.8	54.0	15.7	26.2	10.5
Type 11) Single person, working	18.6	24.5	21.9	48.3	5.9	26.5	20.6
Type 12) Single person, not working	2.2	8.7	3.4	25.2	6.5	21.8	15.3
Type 13) Two or more persons, at least one working	47.9	62.0	40.6	60.8	14.1	20.3	6.2
Type 14) Two or more persons, none working	5.1	29.0	5.8	53.0	23.9	47.2	23.3

Source: Authors' calculations with microdata from the CSLC, MHLW.
Notes: 1. The middle class is defined based on equivalized household disposable income and equivalized household initial income.
2. The range of the middle class is 75% to less than 200% of the median income.

5. Discussion

The transition of Japan's middle class

In previous studies, the proportion of the middle class was calculated by defining the middle class range based on annual median income and comparing the time series. Following this approach, it is first necessary to consider the transition of the proportion of the middle class in Japan according to the results in Figure 1 and Table 1. Figure 1 and Table 1 show that the proportion of the middle class declined from 1985 to 2000 and then remained within a certain range without any significant decline or increase. In the 30 years from 1985 to 2018, the proportion of the middle class declined, but in the 15 years since 2003, it has neither increased nor decreased.

However, as Tanaka (2020) also points out, the stable movement of the middle class proportion between 2003 and 2018 was related to a decline in middle class incomes. As discussed in Section 4.2, when the income distribution is compressed toward zero, the income of many people including the middle class will fall, even if there is no change in the middle class proportion; thus, such changes require more careful consideration.

In Section 4.2 of this study, we fixed the range of the middle class to a specific year and checked the change in the proportion of the middle class as additional verification. The results we obtained by creating three patterns of years to fix the range of the middle class in 1985, 1997, and 2018 and then checking the changes in the proportion of the middle class showed that the pattern of the proportion's rise and fall changes considerably for different years of fixation. In particular, when the middle class range was fixed at 1997, we obtained a different transition in the proportion of the middle class from Figure 1, with the proportion rising from 1985 to 1994 or 1997 and then declining by nearly 10 percentage points through 2015.

Whether to use only the proportion of the middle class determined based on annual median income or the proportion determined by fixing the range in a given year depends on the policy direction and the objectives of the study in question. The proportion of the middle class determined by fixing range would be needed, for example, in cases where the policy direction is to restore income levels that were achieved in the past and subsequently lost. Such a case would be when studying policy direction using terms such as "middle class revival" (MHLW 2012).

Comparison of the middle class in Japan and other countries

When determining the median equivalized disposable income and defining the middle class range, as in this study, the proportion of the middle class and the relative poverty rate, which is often used in poverty studies, are measured according to the same scale. In other words, the proportion of the middle class and the relative poverty rate are mutually consistent (relative poverty rate [= proportion of the poor group] + proportion of the lower income group + proportion of the middle class + proportion of the upper income group = 100).

As of 2022, the relative poverty rate for Japan shown in the Income Distribution Database (IDD) of OECD Statistics on the web is calculated based on the CSLC. The OECD's IDD figures are frequently referred to for international comparisons of relative poverty rates and income inequality levels because poverty and income inequality indicators (such as the Gini coefficient) are available for about 40 countries. In other words, many poverty and income inequality studies refer to Japan's relative poverty rate and Gini coefficient based on the CSLC. OECD (2019), cited in Section 4.3, also calculates the proportion of the middle class based on national statistics used in the IDD for many countries. In light of these circumstances, it is considered necessary to first calculate the proportion of the middle class based on the CSLC to obtain a figure consistent with the widely used Japanese relative poverty rate (= proportion of the poor group).

As we observed in Section 4.3, the proportion of the middle class in Japan based on the CSLC in the mid-2010s was smaller than the average proportion of the middle class in the 35 then-existing OECD countries during the same period. This result is consistent with the relative poverty rate based on the CSLC. In addition,

based on the CSLC, the proportion of the middle class in Japan is smaller than those of France and Germany, closer to that of the United Kingdom, and larger than that of the United States. Furthermore, if we replace the figures for Japan in OECD (2019), which is the source of the citation for Figure 4, with the 2015 figures based on the CSLC and compare Japan with 34 other countries, we find that Japan's proportion of the middle class is the 11th from the lowest overall and the second lowest among the seven advanced economies after the United States. (Its relative poverty rate [= the proportion of the poor group] is the ninth highest overall and the second highest among the seven advanced economies, after the U.S.).

Regarding the change in the proportion of the middle class, the average proportion of the middle class in the 17 then-existing OECD countries declined over the 30 years from the mid-1980s to the mid-2010s, while the proportion of the middle class based on the CSLC declined more than the OECD average over the same period. If we add the figures for Japan based on the CSLC to OECD (2019) cited in Figure 5 and compare it to the 17 OECD countries, the change in Japan's proportion of the middle class ranks third, counting from the largest negative range. As far as we can judge based on the CSLC, the proportion of the middle class in Japan falls into a relatively small group by international standards, and the proportion of the middle class declined significantly from the mid-1980s to the mid-2010s compared to other countries.

However, it is necessary to strictly separate the fact that figures based on the CSLC are often used in poverty and income inequality studies from the question of whether only figures based on the CSLC should be used. Typically, in Japan, the CSLC and also the NSFIE are the statistics applied in calculating the proportion of the middle class based on equivalized disposable income. However, as Tanaka and Shikata (2019) also point out, there are statistical technical differences between the two statistics. The Cabinet Office (2015) has also identified some improvements.

When it is difficult to settle on a single statistical source for use, for example, in income inequality studies, the approach often taken is to lay out figures calculated based on multiple statistics and various indicators (e.g., inequality indicators other than the Gini coefficient) and compare them. Another approach often used is to focus on the direction of change in income inequality (i.e., whether it is rising or falling) rather than on the level of income inequality. In accordance with the above, comparing the results of the CSLC presented by this study and Tanaka (2020) and the result of the NSFIE by Tanaka and Shikata (2019) regarding the direction of change in the proportion of the middle class shows that, in both cases, the proportion of the middle class declined until the end of the 1990s and has remained stable since the 2000s. Regarding the range of change, the only figures available in Tanaka and Shikata (2019) are for the period from the mid-1990s to the end of the 2000s, so in comparing the change in figures for that period, there is a 3.3-percentage-point decline between 1994 and 2009 for the CSLC (from 60.6% to 57.3%) and a 2.1-percentage-point decline between 1994 and 2009 for the NSFIE (from 67.3% to 65.2).[5] The proportion of the middle class declined in both cases, but the extent of the decline is about 1 percentage point.

When comparing the range of change internationally, it is necessary to match the figures presented in the CSLC and the NSFIE with those presented in OECD (2019). In OECD (2019), the 17 OECD country averages for the mid-1980s, the mid-1999s, the mid-2000s, and the mid-2010s are available, as shown in Panel B of Figure 5, so we take these figures for the mid-1990s and the mid-2000s and compare them with the results from the CSLC and the NSFIE. From the mid-1990s to the mid-2000s, the share of the middle class declined by 0.7 percentage points in the 17 OECD country average, compared to 2.5 percentage points in the 17 OECD country average (from 60.6% in 1994 to 58.6% in 2006). As discussed in Section 4.4, and as Tanaka (2020) found, in Japan, the change in the proportion of the middle class in the population as a whole has been significantly influenced by the aging of the population, as compared to the change in the proportion of the middle class in the population as a whole. Although it should be noted that the aging of the population has a significant impact on the proportion of the middle class, a comparison of the results based on the CSLC and the NSFIE and those of

OECD (2019) indicates that the proportion of the middle class declined more significantly in Japan than in other countries during the decade around the year 2000.

The relationship between working, aging, and the middle class

In the analysis in Section 4.4, we calculated the proportion of the middle class by household type and reviewed the trends. The first thing to emphasize in the results is that the presence or absence of a working person in households has a significant relationship with the high and low proportions of the middle class. In addition, this relationship can be confirmed not only for the category of households with a head aged 18-64 but also for the category of households with a head aged 65 or older. For both non-retired and retired households, the results suggest that if the policy goal is to increase the proportion of the middle class, consideration must be given to measures to promote work among those who are not working. In particular, as the population continues to age, the impact of the elderly on the share of the middle class in the population as a whole will increase, and more measures will be required to promote work among the elderly who are not at work.

It should be noted that the term "work" used here is not necessarily synonymous with employment. It includes traditional forms of work, such as self-employment and family employment, as well as non-traditional forms, such as the work of independent contractors and dependent contractors. In Japan, until the 1980s, a certain number of workers were employed as self-employed or family workers (Kambayashi and Kato 2016, Kambayashi 2017). Considering the results of Kambayashi and Kato (2016) and Kambayashi (2017), it can be inferred that self-employment and family employment are widespread among the elderly population. Similarly, Table 4 in Section 4.5 of this study shows that the proportion of the middle class based on equivalized initial income for Household Type 13 (that is, households with a head aged 65 or older, two or more adults, and at least one working) is 47.9% in 1985 and 40.6% in 2018, with the proportion being higher in 1985. This suggests that, in 1985, a certain number of elderly persons earned business income as self-employed or family workers that was higher than the amount of pensions and other social security benefits they received, and as a result, more of them fell into the middle class.

After reviewing the share of each household type in Figure 7, we confirmed that only a limited number of household types significantly affect the proportion of the middle class in the population as a whole. The aging of the population has essentially reduced the share of households with a head aged 18-64, and its influence on the proportion of the middle class in the population as a whole has also declined. However, for Household Type 8 (households with two or more adults, children, and at least two working), the decline in the share bottomed out in 2009 and has been increasing ever since, albeit only slightly. This contrasts with the share of Household Type 9 (households with two or more adults, children, and one working), which has declined since 2009.

The fact that the share of Household Type 8 has stopped declining suggests that the number of households in which both spouses work has probably increased. When considered together with the fact that the share of Household Type 9 has continued to decline and that the share of the middle class in Household Types 8 and 9 has remained relatively high, it can be inferred that there are a certain number of cases in which both spouses chose to work in order to secure more than a certain level of household income. As a result, income measured by equivalized disposable income for those households remained within the middle class range. On the other hand, households included in Household Type 9 could be considered households that are likely to remain in the middle class range based on the income of one worker alone, but such households are becoming a minority among households with a head aged 18-64. The analysis in Section 4.4 suggests that, while it is of course important to focus on raising labor income on an individual basis when considering policy measures to raise the proportion of the middle class, it is also necessary to take measures to promote an increase in overall household income by adding the incomes of married couples through the creation of an environment in which both spouses can work.[6]

The relationship between redistribution and the middle class

The analysis in Section 4.5 shows that, when viewed across the population, redistribution through taxes and social security increases the proportion of the middle class. However, most of this effect occurs in households with a head aged 65 or older, and the effect of raising the proportion of households with a head aged 18-64 is negligible. Several previous studies have pointed out that the redistributive effects of taxes and social security in Japan are particularly high for the elderly, and the analysis in Section 4.5 shows similar results. Furthermore, this boosting effect increased from the 1980s to the 2010s for households with a head aged 65 or older, while it has decreased for households with a head aged 18-64.

In Japan, the burden of social security contributions has been increasing since the start of contributions for long-term care insurance in 2000 and increases in contributions for pension insurance from the mid-2000s to the mid-2010s. This increasing burden may have led to a decline in disposable income and thus reduced the effect of increasing the proportion of the middle class. The result is a widening gap between initial and disposable income. Looking at the trends in equivalized initial and disposable income shown in Table 5, the median income of equivalized initial income in 2018 for households with heads aged 18-64 is 3,464,000 yen, and the median income of equivalized initial income in 1994 is about the same (3,457,000 yen, adjusted for 2018 base year prices). And while the equivalized disposable median income in 1994 is 3,081,000 yen, it is 2,915,000 yen in 2018, about 170,000 yen smaller. With the gap between equivalized initial and disposable income growing, equivalized disposable income is not expected to rise as much as equivalized initial income, even if equivalized initial income rises through wage increases, etc. Consequently, increases in the proportion of the middle class are expected to be smaller.

6. Conclusion

This study uses microdata from the Comprehensive Survey of Living Conditions to identify changes in the proportion of the middle class in Japan. It also examines the factors behind these changes.

From 1985 to 2018, the proportion of Japan's middle class declined. The decline was particularly large from 1985 to 2000, and remained stable within a certain range from 2003 to 2018. When the range of the middle class

Table 5. Changes in the median income before and after redistribution

(Unit: Ten thousand yen)

	Households with a head of non-retirement age (18-64)			Households with a head of retirement age (65 and over)			All households		
	Equivalized disposable income	Equivalized initial income	Difference	Equivalized disposable income	Equivalized initial income	Difference	Equivalized disposable income	Equivalized initial income	Difference
1985	255.0	270.8	-15.8	243.1	182.7	60.4	253.8	262.8	-9.0
1988	270.6	297.9	-27.3	236.8	175.4	61.4	266.1	283.5	-17.4
1991	297.3	332.2	-34.9	250.5	185.2	65.3	290.0	311.2	-21.2
1994	308.1	345.7	-37.6	264.1	187.3	76.9	300.2	321.8	-21.6
1997	317.0	348.9	-31.9	257.4	170.6	86.8	305.1	316.0	-10.9
2000	296.9	335.0	-38.1	250.4	135.3	115.1	284.4	295.3	-11.0
2003	289.9	332.7	-42.8	240.6	131.7	108.8	274.3	286.8	-12.5
2006	290.9	337.6	-46.7	227.3	99.4	127.9	269.8	280.8	-11.0
2009	289.6	323.9	-34.4	230.7	99.2	131.5	266.2	266.8	-0.6
2012	280.3	322.0	-41.7	232.6	105.6	127.1	262.2	265.5	-3.3
2015	275.3	324.4	-49.1	218.5	102.9	115.6	251.0	259.6	-8.6
2018	291.5	346.4	-55.0	216.7	106.1	110.6	255.9	266.0	-10.1

Source: Authors' calculations with microdata from the CSLC, MHLW.
Note: Equivalized disposable household median income and equivalized initial household median income are adjusted for 2018 prices.

is fixed at a particular year, the decline of the proportion of the middle class becomes larger in some cases.

Comparing the proportion of the middle class internationally based on figures from the Comprehensive Survey of Living Conditions, the proportion of the middle class in Japan is lower than the OECD average. However, when the National Survey of Family Income and Expenditure is used to provide the statistics for calculating the middle class, the proportion of the middle class in Japan is higher than the OECD average. It should be noted that Japan's relationship with other countries in terms of order changes depending on the statistics used. On the other hand, regardless of which statistics are used, the decline in the proportion of the middle class is greater than the OECD average.

We examined background factors behind changes in the proportion of the middle class from the perspectives of working and the aging of the population. We confirmed that the proportion of the middle class is higher when there is a working person in the household than when there is no person working. We also found that the change in the share of the middle class in the population as a whole declined, largely due to a decrease in the share of non-retired households with a relatively high share of the middle class and an increase in the share of retired households with a relatively low share of the middle class.

Redistribution through taxes and social security has the effect of boosting the middle class's proportion. The effect is mainly large for retired households and relatively small for non-retired households. The effect for non-retired households was smaller in 2018 than in 1985.

Although, in this study, we defined the middle class mainly in terms of income and examined its time-series trends, there are other ways to define and analyze the middle class in terms of consumption and assets. We also examined working status and aging as background factors behind changes in the middle class. However, the middle class change in the relationship with labor income changes, employment status diversification, and differences in employment opportunities between urban and rural areas remains unexamined. Analyses of these matters will be the subject of future work.

Notes

1. See, for example, Shinozaki (2015) for a discussion of threshold setting and additional information on the benefits of defining those who fall within a certain range of median income to the middle class.
2. When the proportion of the middle class is calculated from a sample survey such as the CSLC, the figure has an error due to sampling. We estimate the standard error of the value for the proportion of the middle class to be about 0.45% (in 2018) using the bootstrap method (1,000 replications). Assuming that this value can be applied to other years, we can estimate that a difference of approximately 1.2 percentage points or more between the two values for the proportion of the middle class would be considered statistically significant (at the 5% significance level).
3. Note that OECD (2017) divides the elderly and non-elderly groups at age 66. In Japan, the starting age for old-age pension benefits is 65, and the labor force participation rate is relatively high up to age 65 and begins to decline significantly at age 65 and above. For this reason, we decided to divide household types into those under 64 and those 65 and over in this study.
4. The definition of "factor income" differs slightly across studies. For example, OECD (2008) defines factor income as the sum of compensation of employees, business income, and property income, which differs from the definition of Derndorfer and Kranzinger (2021). The latter authors' definition is close to the definition of "market income" of Atkinson et al. (1995).
5. The definition of middle class in Tanaka and Shikata (2019) uses the same definition as in this study, and their results can be compared with each other.
6. The fact that the decline in the share of Household Type 8 has stopped, together with the gradual increase in the share of high-income households when comparing 1985 and 2018 in Figure 1 and elsewhere, suggests that there may be a gradual increase in cases where both spouses are working and each has a high income, resulting in higher equivalized disposable income for the household as a whole.

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