Analysis of Income and Wealth Inequality by Age

By Tatsuya Ishikawa
Economic Research Group
ishikawa@nli-research.co.jp

The consensus view is correct in that overall income inequality is growing in Japan largely as a result of the population's aging—the growing proportion of elderly households accentuates their traditionally large income inequality. However, household surveys also reveal that income inequality is growing rapidly in young households. In addition, inequality in financial wealth is expanding as more households of all ages own no financial assets other than cash. Since recent income and wealth inequalities tend to persist, these results raise serious concerns that young households will be financially vulnerable in the long term.

1. Introduction

Since being featured in the January issue of the government's *Monthly Economic Report,* income and wealth inequality have resurfaced as a contentious public issue. Of course, there are no simple answers as to how society should deal with economic inequalities and to what extent they should be reduced. But part of the problem can be addressed by recognizing the facts. If the facts indicate that inequalities are *not* widening, we can put to rest the vague sense of anxiety and inequity that has grown from speculation. On the other hand, if inequalities do exist and severe financial distress is muting the demand for financial assistance, we must take account of this and move the public debate forward.

There is broad consensus that the growing income inequality found in the data can largely be attributed to population aging and growth of nuclear families. But at the same time, there is evidence to support the claim that income inequality is widening in the young population. In addition, some observers argue that the age structure of income distribution is quite different from that of wealth distribution. As such, the actual status of economic inequalities is cloaked in confusion.

This paper aims to objectively examine economic inequalities by measuring the Gini coefficients of income and wealth by age bracket from the mid-1980s.[1] To accurately measure the degree of inequality, it would be best to access the massive quantity of raw data from which official statistics are compiled. Unfortunately, only part of this data is available for research purposes. But the available data from two household surveys will suffice to discern trends in inequality—*Basic Survey of National Life* by the Ministry of Health, Labor and Welfare (MHLW), and *National Survey on Family Income and Expenditure* by the Ministry of Internal Affairs and Communications (MIC).

2. Income Inequality by Age

(1) Current Status of Income Inequality

Although income inequality represents an entirely different issue from the household sector's saving rate, they share similarities in the sense that both are susceptible to effects of aging and growth of nuclear families. First, as the proportion of retired elderly households increases, the overall saving rate tends to decrease. Since

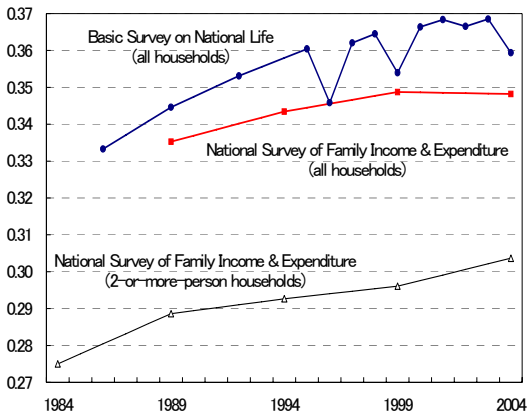
[1] The Gini coefficient measures the degree of equality in the distribution of income or wealth. The coefficient takes a value between zero (perfect equality) and one (perfect inequality).

nonworking elderly households must consume beyond their income by dissaving, their saving rate is obviously negative. In addition, more elderly persons are not living with their children, and instead forming new independent households, which tends to increase consumption per elderly person. The growth of these households is a major cause of the secular decline in the household sector's saving rate. At the same time, the recent plunge in the saving rate is impacted by the growing size of the negative saving rate as retired elderly persons consume more than before. In addition, a growing number of nonelderly households are thought to be dissaving due to unemployment or significant decline in income. Thus factors other than aging and nuclear families may be affecting income inequality as well.

To track income inequality trends for all households and by age of householder, we analyzed time series data from two sources: *Basic Survey on National Life* (Ministry of Health, Labor and Welfare), and *National Survey of Family Income and Expenditure* (Ministry of Internal Affairs and Communications).

Figure 1 plots the pretax income Gini coefficient for three different types of data. This coefficient is the most widely used indicator of income inequality.

Figure 1 Pretax Income Gini Coefficient



Sources: Ministry of Health, Labor and Welfare, *Basic Survey on National Life* (Jan.-Dec. period preceding survey date); Ministry of Internal Affairs and Communications, *National Survey of Family Income and Expenditure* (Dec.-Nov. period preceding survey date).

For all three time series, the Gini coefficient rises over the long term, confirming that the broadest measure of income inequality is growing for society as a whole.[2]

In the MIC data, the Gini coefficient for all households (including one-person households) is consistently larger than for single-person households. Since single-person households tend to have lower incomes than other households, they increase the overall income inequality. Two-or-more-person households have a built-in income stabilizer—if an income earner loses income, another household member can supplement the income by finding a job or working longer hours. As long as this mechanism works to any extent, households as a whole should have less income volatility than single-person households.[3] This mechanism may also reduce the apparent income inequality among two-or-more-person households.

In addition, the MHLW and MIC data for all households produce two distinctly different Gini coefficient curves. This is because differing definitions of income the two data series cause a consistent gap in the calculated Gini coefficient.[4]

Next we simulate the Gini coefficient after removing the effect of changes in age composition, and examine its trends. Leaving the age weights unchanged from the base year, we use actual values for income and its distribution across households in each age bracket. The results are shown in Figure 2.

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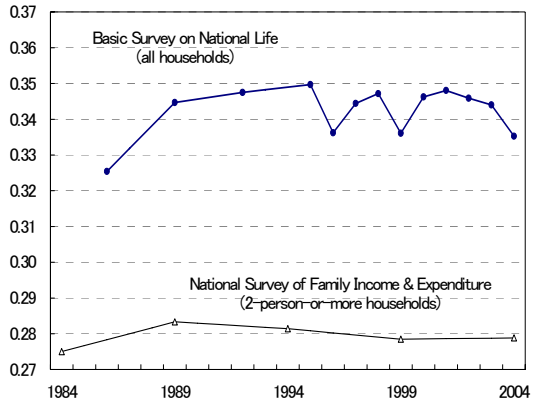
[2] Unlike the other two time series data, the MIC time series data for all households is almost flat from 1999 to 2004.

[3] For example, if we analyze the standard household (a working household with four family members including income earner), household income is not strongly affected by changes in the number of income earners, and the age of the householder is from the late 30s to early 40s. The pretax income Gini coefficient for the standard household rose from 1996 to 2002. For more information, see "Individual Income Taxation from the Perspective of Income Redistribution Effects" (in Japanese), *NLI Research Institute Journal,* volume 35.

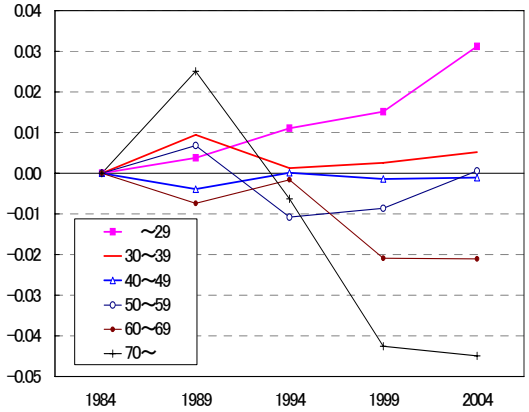
[4] The MHLW data contains average values by income quartile, while the MIC data (two-or-more-person households) contains average values for either 19 or 10 different income brackets.

Figure 2 Income Gini Coefficient (constant age composition)



Note: Calculated using age composition of households in base year 1986 for the *Basic Survey on National Life*, and base year 1984 for the *National Survey of Family Income and Expenditure*.
Source: See Figure 1.

Figure 4 Change in Income Gini Coefficient by Age (MIC data)



Note: Shows change in Gini coefficient from base year 1984.
Source: MIC, *National Survey of Family Income and Expenditure*.

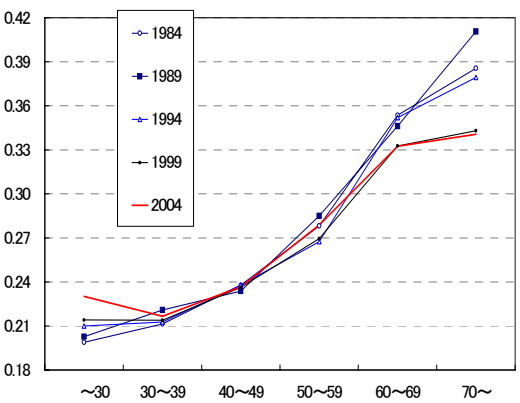
Unlike Figure 1, the Gini coefficient does not rise from the late 1980s. This result indicates that the increase of the Gini coefficient observed in Figure 1 is largely caused by the aging of the population.

However, this does not imply that the growth of income inequality in Figure 1 is simply a superficial phenomenon. Changes may be occurring within each age bracket that offset each other.

To test this possibility, we calculate the Gini coefficient by age bracket from the MIC data for two-or-more-person households. Figure 3 plots the Gini coefficient by age for different years, while Figure 4 plots the change in Gini coefficient by age over time.

The graphs show first that regardless of the survey year, income inequality increases with age. Thus even if inequality within each age bracket remains stable, the aggregate Gini coefficient tends to rise as the demographic composition shifts upward toward age brackets with a large inequality. However, in reality, the age composition is not all that is changing. The Gini coefficient behaves very differently in each age bracket.

Figure 3 Income Gini Coefficient by Age (MIC data)

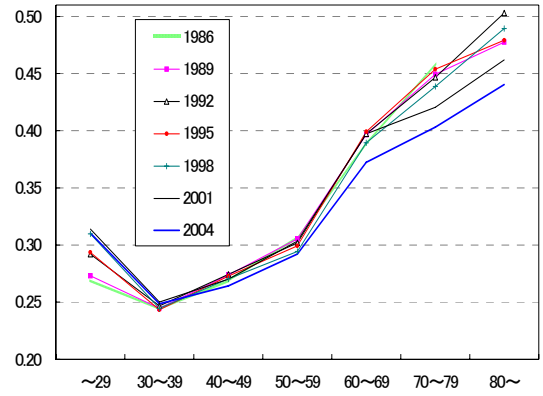


Source: MIC, *National Survey of Family Income and Expenditure*.

Income inequality in households aged 70 and over has been declining since 1989, but continues to expand in households under age 30. For households aged 30 to 39, it shrank in 1994 but has since risen.

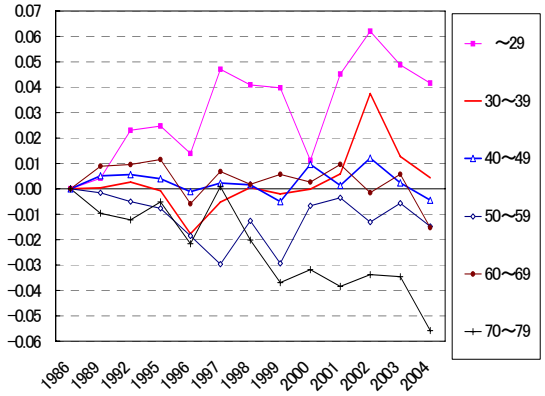
Nearly identical patterns are seen in the Gini coefficient calculated from the MHLW data for all households including single-person households (Figures 5 and 6).

Figure 5 Income Gini Coefficient by Age (MHLW data)



Note: Shows data in three-year intervals for simplicity.
Source: MHLW, *Basic Survey on National Life*.

Figure 6 Change in Income Gini Coefficient by Age (MHLW data)



Note: Shows change in Giini coefficient from base year 1986.
Source: MPT, *National Survey of Family Income and Expenditure*.

(2) Factors Causing Changes in Income Inequality

The data reveals that two offsetting trends have been stabilizing the income Gini coefficient for all households—the traditionally small income inequality of young households is expanding, while the traditionally large income inequality of elderly households is shrinking.

Unfortunately, the data does not directly reveal the factors causing these changes. Several factors may account for the shrinking income inequality of elderly households. For example, as more full-term participants of the pension system start to retire, income differentials should shrink between elderly persons receiving large public pension benefits, and those who still earn wages. The data shows no discernible increase in households receiving large pension benefits. However, the number of households receiving near-zero benefits has decreased over time. Another important factor is that the proportion of wage-earning elderly households has decreased, reducing the relative proportion of high-income households. In addition, more elderly persons may find living alone too difficult and returning to live with their children, which could explain part of the apparent decrease in low-income, single-person elderly households.

As for the growing income inequality among young households, one factor may have been the severe employment and wage conditions that new graduates and young workers faced in the stagnant economy of the mid-1990s to early 2000s. The unemployment rate of persons in their 20s and 30s continued to rise until 2002 and 2003. In addition, many young persons could only find work as nonregular employees, earning lower wages than regular (permanent) employees.

Considering their potential to accumulate human capital, it was particularly unfair to new graduates and young persons to miss good job opportunities for so long compared to earlier workers protected by labor unions. Of course, it is a serious matter whenever willing and able persons of any age become unemployed and cannot find new jobs in a timely fashion.

In any case, the growth of income inequality in a particular age bracket is not necessarily good or bad. On the other hand, a stable income inequality does not necessarily imply that existing inequality issues can be dismissed.

Unfortunately, the data limits the scope of analysis. Thus we shift our perspective and look for any increase in households on the brink of

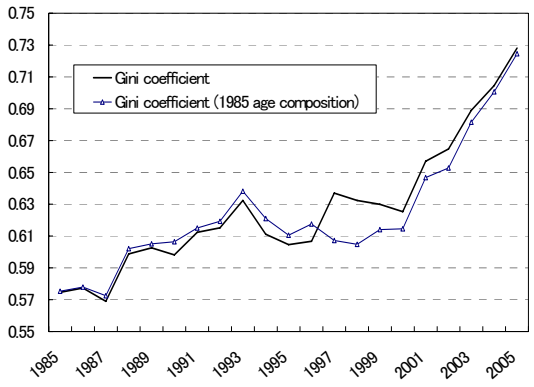
financial distress—that is, households that do not possess adequate financial assets as a "buffer" stock to confront involuntary unemployment or other unexpected event. In the next section, we analyze inequalities in financial wealth.

3. Wealth Inequality by Age

The precautionary motive for saving promotes wealth accumulation to prepare against unexpected events. Normally, people respond to an income decrease by decumulating their own assets before seeking social assistance from the government. While no objective standard exists for the adequate level of precautionary savings, a sudden plunge in income will obviously cause distress to households with few liquid assets.

To analyze whether financial-wealth inequality is growing, we focus on households who own no financial assets whatsoever. The following analysis is based on data from the Central Council for Financial Services Information (*Public Opinion Survey on Household Financial Assets and Liabilities).*[5]
Figure 7 plots the Gini coefficient for non-cash financial wealth of all households from 1985 onward. The graph also plots the same Gini coefficient when age composition weights are fixed at 1985 levels.

Figure 7 Financial-Wealth Gini Coefficient

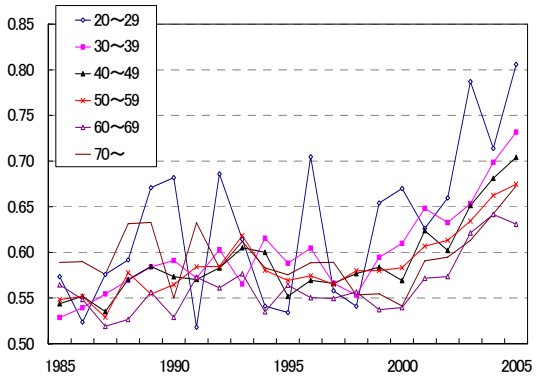


Note: Cash is excluded from financial assets.
Source: Compiled from Central Council for Financial Services Information, *Public Opinion Survey on Household Financial Assets and Liabilities*

As with pretax income, the financial-wealth Gini coefficient for all households tends to rise in the long-term. However, there is a major difference—setting age composition weights at the 1985 level does not significantly alter the time series pattern. This result suggests the existence of a factor more powerful than changes in age composition.

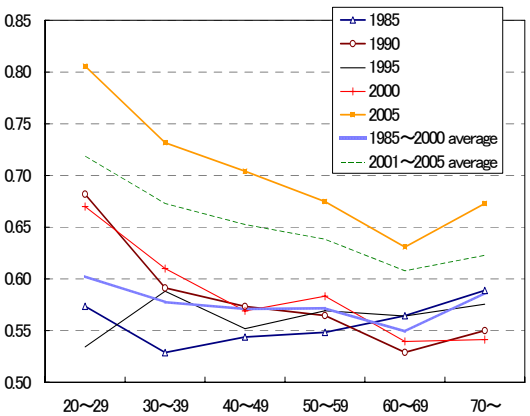
Figure 8 plots the financial-wealth Gini coefficient by age over time. For a better view of

Figure 8 Financial-Wealth Gini Coefficient by Age



Source: See Figure 7

Figure 9 Financial-Wealth Gini Coefficient by Year



Source: See Figure 7.

[5] Time series data for financial wealth is also available in the MHLW survey. However, we did not use this data because questions related to financial assets were altered in the 2001 survey, which could affect

changes in the relative size of Gini coefficients, Figure 9 extracts the results by age for each five-year survey from 1985 onward.

Financial-wealth inequality is largest in the 20s age bracket, and tends to shrink until the 40s age bracket. Wealth is basically accumulated from what is saved after consuming out of disposable income each year. However, another important source of wealth is inheritance, which can increase wealth suddenly. The fact that the 20s age bracket has both the smallest income inequality and largest wealth inequality suggests that inherited wealth plays a key role in the wealth distribution of this age bracket.

The fact that financial wealth inequality shrinks as age increases to the 40s may be attributed to the growing probability that people will inherit wealth as time elapses. However, outstanding financial wealth is also affected by home purchasing patterns. Since high income and large financial wealth facilitate home purchases, wealthy people are able to buy a home earlier. Thus it is possible that the required cash down payment temporarily reduces outstanding financial wealth, making the financial-wealth inequality appear to shrink in the 30s and 40s age brackets. If this is the case, the inequality should not decrease for total wealth including tangible assets, or for net worth including liabilities.

To examine this possibility, we calculated another measure of inequality called the quartile dispersion coefficient from the MIC household wealth data. For each age bracket, the first wealth quartile is subtracted from the third quartile, and the result is divided by twice the median value. We then compared the structure of wealth inequality by age for both total wealth and financial wealth (Figure 10).

The results show that financial-wealth inequality decreases from the late 20s and is smallest in the late 30s. However, for total wealth, which includes housing and land, the inequality grows from the mid-20s to early 30s, then decreases

Figure 10 Wealth-Quartile Coefficient of Dispersion by Age (for total and financial wealth)

	Total wealth			Financial wealth		
	1994	1999	2004	1994	1999	2004
~24	0.807	0.899	1.054	0.774	0.858	1.018
25~29	0.794	0.975	0.966	0.654	0.768	0.879
30~34	1.012	1.133	0.995	0.642	0.739	0.674
35~39	0.838	1.021	0.971	0.567	0.637	0.633
40~44	0.705	0.779	0.944	0.587	0.674	0.676
45~49	0.657	0.704	0.802	0.607	0.653	0.665
50~54	0.608	0.666	0.725	0.632	0.696	0.753
55~59	0.662	0.614	0.688	0.704	0.752	0.810
60~64	0.659	0.607	0.626	0.735	0.779	0.807
65~69	0.744	0.625	0.609	0.869	0.800	0.833
70~74	1.032	0.645	0.669	1.047	0.837	0.802
75 ~	1.491	0.742	0.662	0.739	0.928	0.900

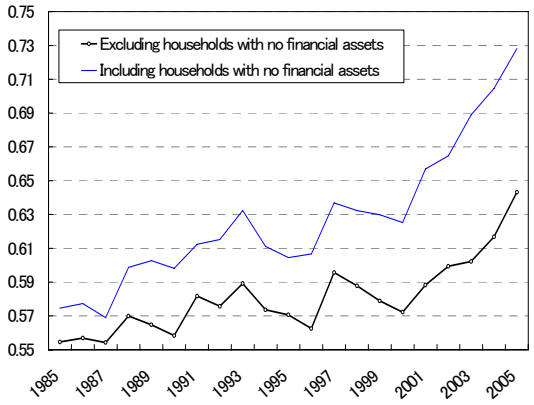
Note: Quartile coefficient of dispersion = (3rd quartile – 1st quartile) ÷ (Median × 2).
Source: MIC, *National Survey of Family Income and Expenditure*.

from the late 30s and is smallest from the 50s onward. Moreover, historical values of the indexes reveal that the age bracket with the smallest wealth inequality edges upward from 1994 to 2004, coinciding with the slower decline in home values after the collapse of the land price bubble. Also, judging from the life expectancy of the parent generation and the age difference with children, we surmise the average inheritance age to be in the late 50s. Thus although wealth inequality decreases as people reach inheritance age, the effect is gradual, and limited to total wealth. Moreover, it does not dismiss wealth inequality as an issue. Indeed, a significant gap could exist between households that eventually inherit wealth and those that do not.

Returning to the matter of financial-wealth inequality by age, we note that the financial-wealth Gini coefficient rises for all age brackets after 2000. This broad trend can be attributed to the sudden and persistent increase since 2000 in the proportion of households who own no financial assets other than cash.[6]

[6] In the survey, respondents are instructed that savings should exclude bank accounts used for salary deposits. Some households may have mistakenly omitted this bank account when responding to questions on financial wealth. In addition, given the low interest rates in recent

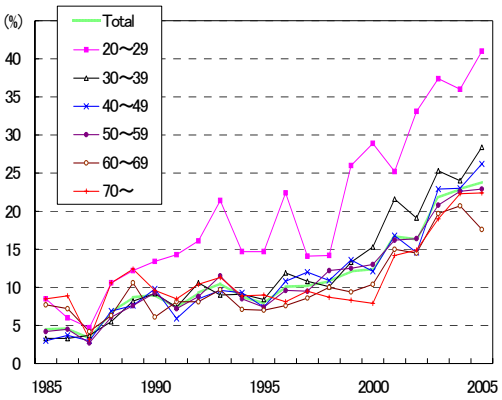
Figure 11 Financial-Wealth Gini Coefficient (excludes households with no financial wealth)



Note: Cash is excluded from financial assets.
Source: Compiled from Central Council for Financial Services Information, *Public Opinion Survey on Household Financial Assets and Liabilities*.

These households comprised over 20% of all households in 2005, and over 40% of households in the 20s age bracket. Many young persons are unemployed or earn insufficient income, and even when they can save, need considerable time to accumulate a significant amount of wealth. Thus a harsh employment environment can directly impact their modest wealth. Since few young households are homeowners, most young households with no financial wealth other than cash do not own any other form of wealth.

Figure 12 Financial-Wealth Gini Coefficient (households with cash only)



Source: See Figure 11.

Obviously, households with low incomes and no financial wealth are quite vulnerable to unexpected setbacks such as job loss or illness. While they are responsible for their own choices, their vulnerability cannot simply be dismissed as a lack of effort. Moreover, poor financial preparedness puts them at a disadvantage in acquiring skills to improve income earning capacity. As a result, the initial setbacks encountered in early years pose the risk of becoming ingrained and causing inequalities to expand in the future.

4. Conclusion

The consensus view is correct in that income inequality in Japan is growing in large part due to aging—as elderly households grow, their traditionally large income inequality boosts the overall income inequality. However, this does not mean that economic inequalities within different age brackets are otherwise stable. We observed how income inequality is shifting within age brackets, and confirmed the growing income inequality of young households. In addition, since 2000, financial-wealth inequality has grown in all age brackets as fewer households own non-cash financial wealth. Considering the recent persistence of income and wealth inequalities, young households may be particularly vulnerable over their lifetime to unexpected shocks from job loss or illness.

This paper barely scratches the surface of economic inequality issues. To promote more serious discussion, we must analyze matters from several perspectives and learn how and why economic inequalities are growing. Meanwhile, we must not forget the importance of rewarding and learning from success. Nor should we dismiss growing inequalities when they are found to exist.

years, households may be leaving their money in bank accounts, which would further accentuate this trend.