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# What Does Sub-sectoring Household Accounts Tell Us about Aging in Japan?

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## Abstract

A lot! Sub-sectoring household accounts is essential to understand the effects of aging on the Japanese economy. Elderly households can fully account for an increase in aggregate consumption expenditures in the period 1989–2009. A decline in their saving rate, rather than age compositional effects, mainly contributed to the decline of the aggregate household saving rate. The effects of redistribution should also be judged based on disaggregated figures because the average figure shows an increase in net receipts, although no age group, but one, enjoyed the increase.

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## 1. Introduction

This study divides Japan's system of national accounts' (SNA) household accounts into sub-sectors using microdata in order to detect the effects of aging in Japan. Although sub-sectoring household accounts was recommended in SNA manuals,<sup>1</sup> it has rarely been attempted in studies worldwide. A notable exception in Japan is Hamada (2003), which we updated and expanded in a series of our works.<sup>23</sup>

Sub-sectoring household accounts is essential to understand how a graying society works in reality—in aggregate, households pay vast amounts of money on one hand, and receive almost the same amount as pecuniary and non-pecuniary incomes on the other hand. Therefore, without sub-sectoring, it is impossible to determine the consequences of redistribution policies, for example. Stiglitz, Sen, and Fitoussi (2010) recommended that more focus should be placed on household accounts and distributional aspects of the SNA, which strongly encouraged our work.

The remainder of this paper is structured as follows. Section 2 explains how the data is calculated. Section 3 shows how a decline in the saving rate of elderly households largely accounts for the consumption expenditure growth in the two decades up to 2009. Section 4 examines redistributive implications of changes in social security systems. In particular, implications for the healthcare systems are further pursued in section 5. Section 6 concludes the paper.

## 2. Data

Sub-sectoring household accounts requires detailed information of household behaviors. Thus, the National Survey of Family Income and Expenditure (NSFIE) is our major information source. The survey is conducted every five years, which allows the collection of information from 57,000 households.<sup>4</sup> The NSFIE provides cross-sectional information on household income and expenditure in the flow accounts, and assets and liabilities in the stock accounts. The basic strategy is to adjust individual household data of the NSFIE, following the SNA definitions, and add them to get sub-sector figures by type, taking into account the number of each type of households.

Although the NSFIE provides detailed information, it is still insufficient. We have to estimate several items, which include:<sup>5</sup> (1) various imputations, such as imputed rents

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<sup>1</sup> See para. 4.151 to 4.160 and 19.9 to 19.13 in 1968 SNA Manual, and para. 4.158 to 4.165 and 24.27 to 24.31 in 1993 SNA Manual, respectively.

<sup>2</sup> Sakai (2010), Kawagoe and Maeda (2013), Maeda and Umeda (2013), and Maeda and Kawagoe (2015).

<sup>3</sup> Another exception is Accardo, Bellamy, Consalés, Fesseau, Le Laidier, and Raynaud. (2008), who divided French household accounts. OECD provided guidelines for sub-sectoring (Fesseau and Le Laidier, 2009).

<sup>4</sup> We have a similar survey, the Family Income and Expenditure Survey, conducted every month, with a rather small sample of 9,000 households.

<sup>5</sup> See for Kawagoe and Maeda (2013) for more details.

and employers' imputed social contributions; and (2) in-kind transfers, such as medical treatments covered by public insurance, and public education.

Some figures in the NIFIE are, unfortunately, unreliable, so they are replaced by our estimates. First, tax and social contribution figures are estimated based on tax codes and other household data, such as revenues, marriage status, and number of children. Second, property incomes may be downward biased because financial assets obtained from the NSFIE severely undershoot the aggregate counterparts in the SNA Annual Report, which is based on the Flow of Fund. To correct the underestimation, we have to resort to a top-down approach as an exception to the general principle employed here—the bottom-up approach. To be specific, the aggregate financial assets are allocated to households on a pro rata basis, and financial incomes are calculated using the allocated amount of assets and the assumed average rates of return on each type of financial assets.

The above procedures bring the sum of our sub-sector estimates fairly close to the official SNA estimates. Unfortunately, data constraints usually disallow us from calculating disaggregate figures, resulting in adjusted aggregates only, with no breakdowns, which are shown Column (2). Despite the aforementioned efforts, there are still some large gaps between the official figures and the sum of the sub-sector figures. For example, our estimate of disposable incomes is smaller than the official counterpart by ¥26.32 trillion or 8.6 percent, most of which is adjustable at the aggregate level (gap2), but not at the disaggregate level (gap1).

Table 1 Gaps between the Official and Sub-sectoring Aggregates (Trillion yen)

	aggregate		subsectoring	gap 1	gap 2	gap 3
	official (1)	adjusted (2)	(3)	(4)=(3)-(2)	(5)=(2)-(1)	(6)=(3)-(1)
Operating surplus and mixed income, gross	57.93	65.38	69.42	4.04	7.45	11.49
Compensation of employees, receivable	243.31	226.96	225.94	-1.02	-16.35	-17.37
Property income, receivable	24.08	14.90	14.99	0.09	-9.18	-9.09
Primary incomes, receivable	325.31	307.24	310.35	3.11	-18.07	-14.96
Property income, payable	3.68	11.72	11.54	-0.18	8.04	7.86
Balance of primary incomes, gross	321.64	295.52	298.81	3.29	-26.12	-22.83
Social benefits other than social transfers in kind, receivable	61.83	58.85	56.93	-1.92	-2.98	-4.9
Other current transfers, receivable	15.19	15.19	15.38	0.19	0	0.19
Secondary distribution of income, resource	418.10	369.56	371.12	1.56	-48.54	-46.98
Current taxes on income, wealth, etc., payable	24.56	24.56	26.99	2.43	0	2.43
Social contributions, payable	52.29	50.84	48.28	-2.56	-1.45	-4.01
Other current transfers, payable	15.48	15.31	15.52	0.21	-0.17	0.04
Disposable income, gross	306.64	278.85	280.32	1.47	-27.79	-26.32
Social transfers in kind, receivable	59.22	48.29	39.27	-9.02	-10.93	-19.95
Adjusted disposable income, gross	365.86	327.14	319.60	-7.54	-38.72	-46.26
Final consumption expenditure	277.22	257.93	256.28	-1.65	-19.29	-20.94
Saving, gross	27.39	20.92	24.04	3.12	-6.47	-3.35
Saving rate, gross (%)	8.93	7.50	8.60	1.1	-1.43	-0.33
Actual final consumption	336.44	306.22	295.55	-10.67	-30.22	-40.89
Adjusted saving ratio (%)	7.49	6.39	7.50	1.11	-1.1	0.01
Consumption of fixed capital	20.68	17.04	16.82	-0.22	-3.64	-3.86
Disposable income, net	285.96	261.81	263.50	1.69	-24.15	-22.46
Adjusted disposable income, net	345.18	310.10	302.78	-7.32	-35.08	-42.4
Saving, net	6.71	3.88	7.22	3.34	-2.83	0.51
Saving rate, net (%)	2.36	1.49	2.74	1.25	-0.87	0.38
Adjusted saving, net	1.95	1.26	2.39	1.13	-0.69	0.44

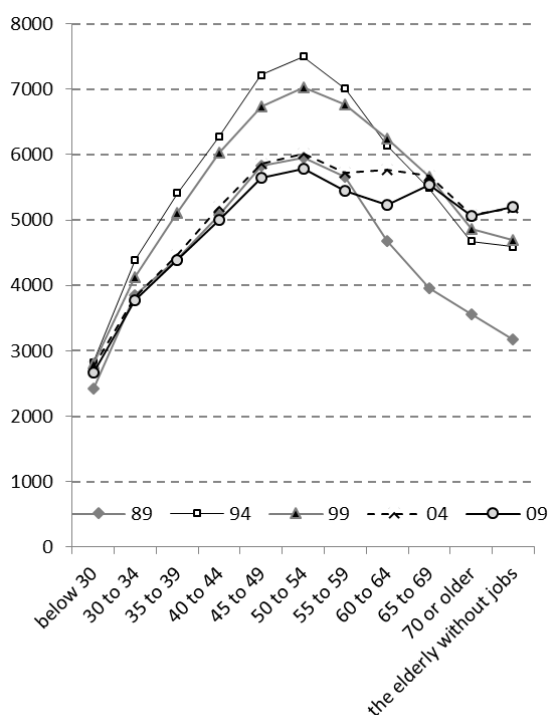
### 3. A Surge in Consumption by Elderly Households

Here, we provide the results of dividing the household account into 10 sub-sectors according to age of household head. Figure 1(1) shows the results gained from five rounds of NSFIE in the period between 1989 and 2009. The figure also presents an additional sub-sector of elderly households with no working family members.

The age-consumption profile overall shifts up in 1994, and then, down in young and middle-aged households. However, surprisingly, the downward shift is not observed in elderly households—their consumption level in 2009 remains virtually the same as that in 1994.<sup>6</sup> The unchanged consumption level per household, together with a significant increase in the number of these households, boosted total consumption expenditures by the elderly households. In fact, an increase in aggregate consumption between 1989 and 2009—¥68.1 trillion—can be almost fully accounted for by that in the elderly households, ¥67.4 trillion, as Figure 1(2) shows.

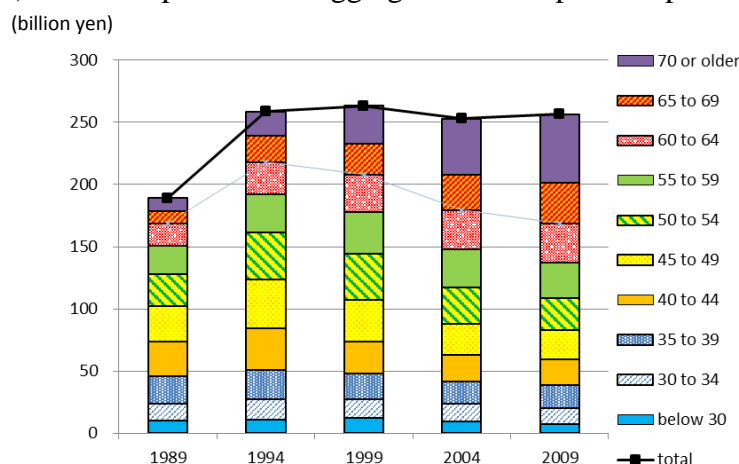
Figure 1 Consumption expenditures by age group of household heads

(1) Consumption Expenditures by Age of Household Head  
(thousand yen)



<sup>6</sup> See also Shiraki and Nakamura(2012).

## (2) Decomposition of Aggregate Consumption Expenditures



The other side of the same coin is developments of saving rates. Figure 2 reveals significantly different movements of saving rates, depending on the ages of household heads. The saving rates of elderly households were higher than those of young and middle-aged counterparts in 1989, and thereafter, plummeted into a negative territory, reaching a double-digit negative in 2009.<sup>7</sup> On the other hand, the saving rates of middle-aged households edged up during this period.

The life cycle theory predicts that progress in aging causes a decline in aggregate household saving rate.<sup>8</sup> Note that the underlying assumption is that the saving rate of elderly households is lower than that of the young and middle-aged, which was not satisfied in the late 1980s. However, since 1999, the saving rates of the elderly have been clearly lower than those of other younger households. Although the precondition of the life cycle theory seemed to be met, the reality is more complex.

Dissaving is particularly evident in elderly households with no working family members (Figure 2).<sup>9</sup> Quantitatively speaking, the average household saving rate fell by around 10 percentage points in the period between 1989 and 2009 (Table 2). The contribution due to the declines in those of households with heads aged equal to or older than 60 is estimated to be more than that, 11.2 percentage points. Although the life cycle theory puts an emphasis on the effect of the age composition changes, they play a minor role of -1.2 percentage points or a tenth of the total decline.

<sup>7</sup> See Unayama (2010) for detailed examination of saving rate of various data sources.

<sup>8</sup> Horioka (1991, 2004) argued that aging decrease aggregate household saving rate probably into a negative territory due to retirements of baby boomers. However, Yashiro (2003) argued the effects of retirement would be slow because baby boomers may prefer to continue working.

<sup>9</sup> Horioka (2010) examined saving rates of various household types and detected a large fall in elderly household.

Figure 2 Gross Saving Rates by Age of Household Head

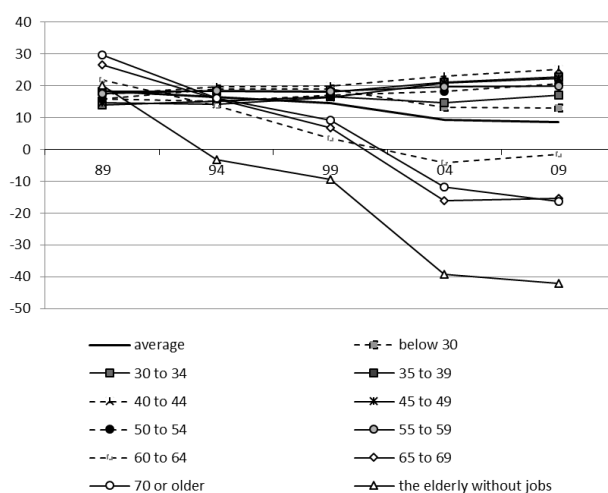


Table 2 Decompositions of variations of gross saving rate

		1989 to 2009	1989 to 1999	1999 to 2009	2004 to 2009
Changes in official estimates		-10.8	-3.4	-7.4	-0.1
Changes in subsectoring		-9.7	-3.9	-5.8	-0.6
Contributions of changes in household compositions		-1.9	0.1	-1.8	-1.2
Contributions of saving rate changes		-7.7	-3.9	-4.1	0.7
of which	householdhead in early 40s	1	0.3	0.5	0.2
	householdhead in late 40s	1	0.2	0.7	0.2
	householdhead in early 50s	0.6	0.2	0.5	0.3
	householdhead in late 50s	0.3	0.1	0.2	0
	householdhead in early 60s	-2.5	-1.9	-0.5	0.3
	householdhead in late 60s	-3.3	-1.4	-2.1	0.1
	householdhead in 70s or older	-5.4	-1.8	-3.6	-0.7
Total contributions of household with head aged 60 or older		-11.2			
of which	composition changes	-1.2			
	household without any workng members	-5.9			
	huosehold with working members	-4.1			

#### 4. Implications for Redistribution Policies

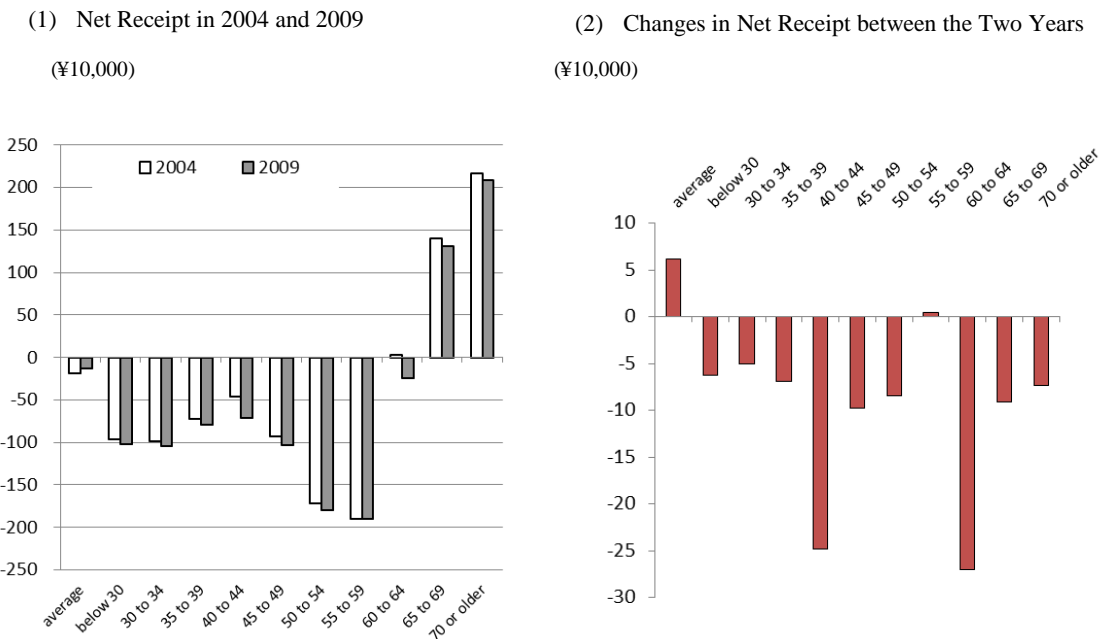
A clear advantage of splitting household accounts is to make effects of redistribution visible. Note that a major innovation of the 1993 SNA is to introduce a distinction between primary and secondary income, thereby making income redistribution more explicit. However, without the breakdowns of the account, it is impossible to know who gets what. In other words, a full force of the innovation of 1993 SNA would be felt only if the breakdowns of household accounts are in place.

Figure 3(1) depicts the net receipts resulting from income redistribution accruing to households by heads' age group in 2004 and 2009. The effect of income redistribution should be measured by the difference between primary incomes and adjusted disposable incomes. Using (unadjusted) disposable incomes overlooks in-kind receipts, such as

healthcare and nursing care, thereby underestimating net receipts. Positive net receipts are observed for households headed by those aged 65 or older in 2009, which is financed by the other household and bond issuance. Those in their early 60s were gainers in 2004, but turned into losers in 2009, mainly due to a gradual rise in eligible age for pensioners.<sup>10</sup>

Now, we will proceed to further investigate the details of the changes between 2004 and 2009 (Figure 3(2)). An increase in the average figure may give a misleading impression of reinforced income distribution functions. On the contrary, no age group but the late 50s gains in the period. Two age groups were hit hard—the early 40s and early 60s. The increase in the average is brought about by compositional changes in the number of households. An increase in the number of elderly households produces sufficiently large gains to totally offset negative effects due to changes in redistribution policies. If the compositions had been the same, the average would have been minus ¥100,000, not plus ¥50,000.

Figure 3 Net Receipts from Redistribution Policies



## 5. Distributive Effects of Changes in Healthcare Systems

Figure 4 focuses on the distributive effects due to changes in healthcare systems out of those in social security systems. On the benefit side, its ratio to disposable income is around 3 percent in households headed by those in the early 50s or younger. However, it is much higher for elderly households, especially 16 percent for those in

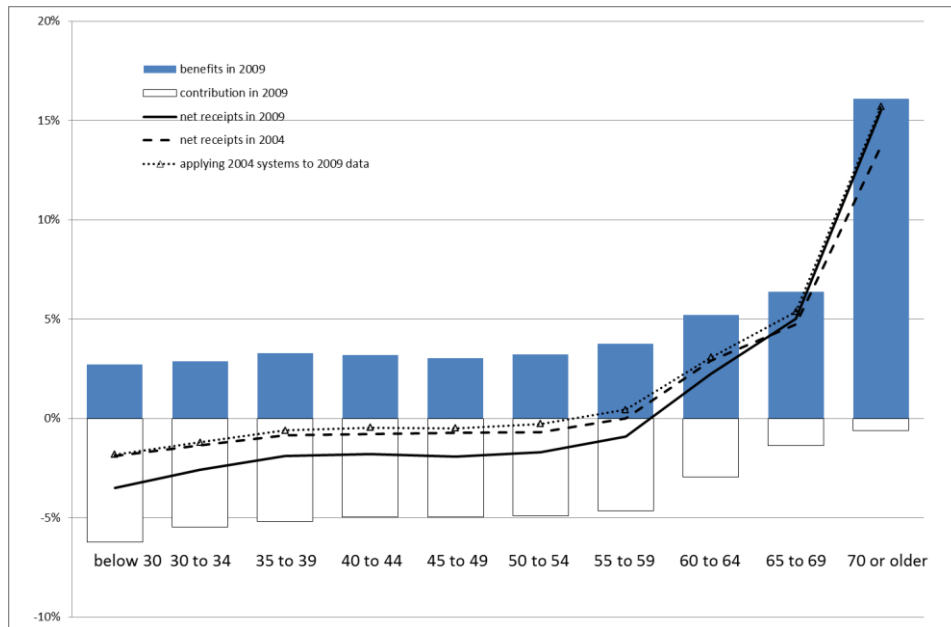
<sup>10</sup> To be specific, the eligible age was raised from 61 to 62 for males and 60 to 61 for females, respectively.



their 70s. On the contribution side, the ratio is approximately 5 percent, except for those in the 60s or older age groups, whose ratio is smaller. As a result, positive net receipts are gained only in households headed by those aged 60s or older.

Compared to the 2004, these results reveal larger net receipts in the 70s or older group, while smaller in the 60s or younger group. Applying the 2004 systems to the 2009 data gives us a clue to the difference. The differences mainly reflect changes in demographic and other socioeconomic factors outside the healthcare systems, except for those in the 70s or older group, because the hypothetical exercise reproduces the results close to the 2004 results.

Figure 4 Redistribution through Healthcare Systems



## 6. Conclusion

Sub-sectoring household accounts provides valuable information on aging. An increase in consumption by elderly households accounts for the increase in aggregate consumption. This increase is attributed to not only an increase in number of such households, but also their maintained consumption levels. The latter caused their saving rates to plummet. A decline in aggregate saving rate mainly reflected that in elderly households, which may fail the prediction of the life cycle theory that age compositional effects matter.

Effects of redistribution were also masked by compositional effects, and therefore, may misguide judgment in the period between 2004 and 2009. Although the net receipts increased in 2009, compared to 2004, on average, most households suffered from decreased net receipts. The changes in healthcare systems themselves do not affect the

overall picture significantly, and factors outside the system largely account for the changes in net receipts.

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