Time to See a Doctor: Expenditure at Retirement in Japan[*]

Kento Tango[†]   Yoshiyuki Nakazono[‡]

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1   Introduction

There is a lot of papers studying "consumption puzzle" at retirement. Life Cycle/Permanent Income Hypothesis suggests that households never decrease consumption at retirement. The past studies such as Banks et al. (1998), Smith (2006), Bernheim et al. (2001) and Fisher et al. (2008), and Haider and Stephens (2007) , however, find a decline in consumption. As for the case in Japan, Wakabayashi (2008) and Stephens and Unayama (2012) show a significant drop in consumption at retirement. The literature suggests that this is because a lack of planning for retirement and knowledge pension benefits as discussed in Engen et al. (1999), Gustman and Steinmeier (1999), Lusardi (2003), Scholz et al. (2006), and Chan and Stevens (2008).

While the earlier literature suggests a decline in consumption at retirement, recent papers show that mixed evidence. For example, Smith (2006) only finds a response for those individuals who involuntarily retired. Battistin et al. (2009) find no evidence when size of household is controlled. Aguiar and Hurst (2005), Hurd and Rohwedder (2003), and Hurd and Rohwedder (2008) show that extra leisure time can account for its response at retirement. Hurst (2008) argues that the evidences does not imply time-inconsistent behavior. The mixed studies about the consumption puzzle suggests that more empirical evidence is needed.

2   Data and Estimation Strategy

2.1   Data

We use panel data (SCI-personal) on households' consumption in Japan collected by Intage Inc. Intage Inc. askes over 50,000 individuals to report what items they buy with a scanner on a daily basis. The data basically covers consumer goods with bar-code, but neither fresh foods nor durable goods. The limited

[†]Yokohama City University, i170445c@yokohama-cu.ac.jp

[‡]Yokohama City University, nakazono@yokohama-cu.ac.jp

coverage is the caveat in SCI-personal; the data includes only consumer goods such as food, beverage, miscellaneous daily goods, cosmetics, drugs, and cigarette with bar-code, while fresh food, durable good, and expenses related to clothing, meals, transportation, and entertainment are not covered.

However, SCI-personal is unique and worthy to be analyzed. The literature studying private consumption using micro data mainly uses the family income and expenditure survey (FIES) collected by the Ministry of Internal Affairs and Communications. While FIES, which serves as one of the basic statistics for the GDP, is based on a limited number of samples, SCI-personal covers over fifty thousand respondents. Furthermore, the survey of periods for each respondent are quite different. The duration of survey in FIES for each household is six months at most. On the other hand, the duration of SCI-personal is 32 months on average.[1] The number of respondents and the average duration of survey periods of SCI-personal are more than five times larger and longer than those of FIES, respectively. The longer duration of survey periods allows us to further examine the consumption puzzle. For example, we can test whether the decrease in consumption at retirement is permanent, and the drop disappears when one gains a job after retirement.

2.2 Estimation Strategy

Using the data from April 2010 to December 2019, we examine the impact of retirement on consumption on a quarterly basis. Following Stephens and Unayama (2012), we use Equation (1):

$$\ln c_{i,t} = \alpha_i + \boldsymbol{X}\beta + \gamma Q_{i,m_s^*} + \varepsilon_{i,t}, \tag{1}$$

where $c_{i,t}$ is equivalence scale-adjusted (and deflated) consumption in month t by women i whose husband retires at the end of the m^*th month in year s.[2] $\boldsymbol{X}$ is defined as vector of household-specific factors in t which include the number of adults and children, marital status, age, and a vector of month dummy. Q_{i,m_s^*} represents a retirement indicator: it takes one after individual i retires at the end of the m^*th month in year s; otherwise zero. α_i and $\varepsilon_{i,t}$ are fixed effect and residual, respectively. Our focus is on the sign of the coefficient γ. Under the LC/PIH, γ should be zero. However, if γ is negative, it suggests a decline in consumption at retirement.

There are two reasons why we use women's consumption in estimating Equation (1). The first reason is representativeness. Women's consumption accounts for a large part of households' consumption. Basic statistics of SCI-personal shows that consumption level of women is double to that of men when it is

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[1]The average duration of survey periods in SCI-personal is calculated from April 2011 to March 2016.

[2]Due to limitation of data, we assume $m^* = 3$: workers retire at the end of March.

measured by median. This figure indicates that women bear most of the living cost in each household. The fact that women's consumption accounts for a large part of households' expenditure is the reason why we use women's consumption.

The second reason is that focus on women's consumption can mitigate the influence of a possible dip of work-related consumption. The past studies documents that the decline in consumption at retirement is not found if the decrease in work-related consumption is controlled[3]. Hurst (2008) suggests that the fall at retirement found in the literature occur within work-related consumption. As shown above, we use data on consumption by women i whose husband retires. While the cost for commuting and business suit which accounts for a large portion of work-related consumption is not originally covered in SCI-personal, most of work-related consumption is considered not to be included in women's expenditure. Thus, we think that the possible problem in identification arising from work-related consumption can be mitigated if we focus on women's consumption.

3 Results

Table 1 report the estimation result from Equation (1).[4] First, γ is significantly negative: it suggests that expenditure significantly decreases at retirement. The decline is found in every good. Second, those who competed university never decrease expenditure at retirement, while the results are not reported to save space. Third, those who completed high school decrease expenditure on healthcare goods at retirement sharply. It may indicates that who completed high school go see a doctor more often than before retirement to save money by not purchasing drugs at drug store, but getting prescribed drug at a hospital because prescribed drugs are affordable due to universal health insurance system. In order to examine the above intuition, we further investigate whether frequent visits explain the level of expenditure on healthcare goods using additional survey for the respondents who record the expenditure. We find that those who visit a doctor more frequently *after* retirement than before, who completed high-school, significantly decrease expenditure on healthcare goods after retirement. It suggests that those who completed high school prefer to go to see a doctor to get prescribed drug at a cheaper price.

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[3]Hurst (2008) also shows that overall consumption declines by a fall in not only work-related consumption but also food consumption mainly because of decrease in opportunities for eating out. However, the cost of food away home is not covered in our database. Therefore, we can ignore the impact of the cost of food away home on overall expenditure at retirement.

[4]We report only the results from the subsample covering those who completed high-school and earn above 7 million yen per year to save space.

4 Conclusion

Using a large-scale monthly panel data collected by 50,000 households in Japan, we test whether there is an immediate decline in consumption at retirement. The homescan data allows us to study a heterogeneous response to retirement among households. There are three findings. First, there are stark evidences of a decline in expenditure at retirement. There is a fall in expenditure even at "expected" retirement. Second, there are heterogeneous impacts of retirement on expenditure at retirement. While there is no dip in consumption of those who completed university, that is the case of those who completed high-school. What determinates a decline is not income but education. Third, those who completed high school sharply decrease expenditure on healthcare goods such as drug. We further examine whether frequent visits explain the level of expenditure on healthcare goods and find that those who visit a doctor more frequently *after* retirement than before, who completed high-school, significantly decrease expenditure on healthcare goods after retirement. It suggests that those who completed high school go see a doctor more often than before retirement to save money by not purchasing drugs at drug store, but getting prescribed drug at a hospital because prescribed drugs are affordable due to universal health insurance system.

References

Aguiar, Mark, and Hurst, Erik, (2005) "Consumption versus expenditure." *Journal of Political Economy* 133(5), 919–948.

Banks, James, Blundell, Richard, and Tanner, Sarah, (1998) "Is there a retirement-savings puzzle?" *American Economic Review* 88(4), 769–788.

Battistin, Erich, Brugiavini, Agar, Rettore, Enrico, and Weber, Guglielmo, (2009) "The retirement consumption puzzle: evidence from a regression discontinuity approach." *American Economic Review* 99(5), 2209–2226.

Bernheim, B. Douglas, Skinner, Jonathan, and Weinberg, Steven, (2001) "What accounts for the variation in retirement wealth among US households?" *American Economic Review* 91(4), 832–857.

Chan, Sewin, and Stevens, Ann Huff, (2008) "What you don't know can't help you: pension knowledge and retirement decision making." *Review of Economics and Statistics* 90(2), 253–266.

Engen, Eric M., Gale, William G., and Uccello, Cori E., (1999) "The adequacy of household saving." *Brookings Papers on Economic Activity* 3, 65–187.

Fisher, Jonathan, Johnson, David S., Marchand, Joseph, Smeeding, Timothy M., and Torrey, Barbara Boyle, (2008) "The retirement consumption conundrum: evidence from a consumption survey." *Economics Letters* 99(3), 482–485.

Gustman, Alan L., and Steinmeier, Thomas L., (1999) "What people don't know about their pensions and social security: an analysis using linked data from the health and retirement study." National Bureau of Economic Research Working Paper No. 7368.

Haider, Steven J., and Stephens Jr., Melvin, (2007) "Is there a retirement-consumption puzzle? Evidence using subject retirement expectations." *Review of Economics and Statistics* 89(2), 247–264.

Hurd, Michael D., and Rohwedder, Susann, (2003) "The retirement-consumption puzzle: anticipated and actual declines in spending and retirement." National Bureau of Economic Research Working Paper No. 9586.

Hurd, Michael D., and Rohwedder, Susann, (2008) "The retirement-consumption puzzle: actual spending change in panel data." National Bureau of Economic Research Working Paper No. 13929.

Hurst, Erik, (2008) "The retirement of a Consumption Puzzle." National Bureau of Economic Research Working Paper No. 13789.

Lusardi, Annamaria, (2003) "Planning and saving for retirement." *Dartmouth University Manuscript*

Scholz, John Karl, Seshadri, Ananth, and Khitatrakun, Surachai, (2006) "Are Americans saving "optimally" for retirement?" *Journal of Political Economy* 114(4), 607–643.

Smith, Sarah, (2006) "The retirement-consumption puzzle and involuntary early retirement: evidence from the British household panel survey." *Economic Journal* 116(510), C130–C148.

Stephens Jr., Melvin, and Unayama, Takashi, (2012) "The impact of retirement on household consumption in Japan" *Journal of The Japanese and International Economies* 26, 62–83.

Wakabayashi, Midori, (2008) "The retirement consumption puzzle in Japan." *Journal of Population Economics* 21(4), 983–1005.

Table 1: Consumption at retirement by those who completed high school and earn above 7 million yen

	All	All food	Beverage	Processed food	Without food	Daily necessaries w.o. foods	Healthcare
Panel A							
$t^* - 2$ to $t^* - 1$	−0.0217	−0.0231	−0.0217	−0.0154	−0.0531*	−0.0345	−0.0693*
	(0.0151)	(0.0153)	(0.0241)	(0.0200)	(0.0293)	(0.0250)	(0.0384)
t^* to $t^* + 3$	−0.0396**	−0.0349**	−0.0471**	−0.0371*	−0.0746***	−0.0670**	−0.148***
	(0.0158)	(0.0163)	(0.0213)	(0.0220)	(0.0282)	(0.0264)	(0.0435)
$t^* + 4$ to $t^* + 7$	−0.0335**	−0.0310**	−0.0612***	−0.0245	−0.0535**	−0.0361	−0.123***
	(0.0147)	(0.0151)	(0.0231)	(0.0196)	(0.0267)	(0.0273)	(0.0405)
Observations	24,338	24,338	24,149	24,306	23,751	23,412	9,197
# of individuals	282	282	282	282	281	281	279
Panel B							
t^* to $t^* + 23$	−0.0332**	−0.0298**	−0.0542***	−0.0270	−0.0548**	−0.0426*	−0.124***
	(0.0129)	(0.0133)	(0.0190)	(0.0176)	(0.0231)	(0.0231)	(0.0336)
Observations	24,338	24,338	24,149	24,306	23,751	23,412	9,197
# of individuals	282	282	282	282	281	281	279

Note: Clustered (individual) standard errors are in parentheses. ***, **, and * indicate 1%, 5%, and 10% significance, respectively.

Table 2: Determinants of expenditure on healthcare goods by those who completed high school

	Those who completed high school			
	All sample		# of hospital ≥ 1	
	Healthcare	Drug	Healthcare	Drug
age	0.160**	0.245***	0.196***	0.263***
	(0.0642)	(0.0648)	(0.0755)	(0.0757)
age^2	−0.00775*	−0.0128***	−0.0101*	−0.0146***
	(0.00468)	(0.00475)	(0.00550)	(0.00554)
$retire$	−0.0173	−0.0870	0.0137	−0.0293
	(0.0847)	(0.0848)	(0.0913)	(0.0890)
$\#\ of\ hospital$	−0.00321	−0.00986	0.00274	−0.00587
	(0.00756)	(0.00750)	(0.0105)	(0.0102)
$retirement \times \#\ of\ hospital$	−0.158**	−0.156**	−0.231**	−0.254***
	(0.0631)	(0.0611)	(0.0956)	(0.0904)
Fixed effect	YES	YES	YES	YES
Observations	31,878	29,728	25,819	24,087
# of individuals	18,917	18,125	16,566	15,787

Note: Clustered (individual) standard errors are in parentheses. ***, **, and * indicate 1%, 5%, and 10% significance, respectively.