Consumption Patterns and Lifecycle Reallocation of Korean Elderly

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NUPRI International Conference:
Asia's Dependency Transition: Intergenerational Transfers, Economic Growth, and Public Policy
Tokyo, Japan
November 1-3, 2007

- Motivation
- Retirement and Consumption
- Retirement decision and Consumption
- Retirement Consumption Puzzle and NTA

- MOTIVATION

Motivation

- It is important to pay attention to the effects of household heads' retirement on household consumptions.

  - Retirement is the one of the most important events that most elderly face.

  - Due to the retirement of the household heads, most households experience the declines in household income, which affects the household consumption.

Motivation

Previous Researches

- A number of researches such as Banks et al. (1998), Bernheim et al. (2001), and Hurd and Rohwedder (2003) attempted to explore the relationship between retirement and consumption and showed sharp decline in consumption at the time of retirement.

- Such the sharp decline in consumption at retirement is inconsistent with the consumption smoothing or life-cycle hypothesis

→ Retirement-Consumption Puzzle

Motivation

Why do we focus on the case of Korea?

- Korea is now experiencing the fastest population aging in the world.
- Unlike the USA and UK, Korea maintains very high saving rates and composite household, while the national pension system is immature.
- These factors may cause different effects of the retirement on consumption.

- So, we explore the existence of the retirement consumption puzzle in Korea, and, if exists, we investigate the peculiarities of the puzzle.

Motivation

Population Aging in Korea

→ Total fertility ratio decreases from 4.53 in 1970 to 1.08 in 2005.

Year	1970	1980	1990	2000	2005	2010	2020	2030	2050
TFR	4.53	2.83	1.59	1.47	1.08	1.21	1.24	1.28	1.3

→ Life expectancy increases from the age of 62.3 in 1971 to 77.9 in 2005, and projected to 83.3 in 2050.

Motivation

Population Aging in Korea

• Low levels of fertility and continued improvements in life expectancy in Korea give rise to very rapid population aging

→ Old age dependency rate increases from 5.7% in 1970 to 12.6% in 2005, and is prospected to increase to 69.4% in 2050.

Trends of dependency rate

Year	1970	1980	1990	2000	2005	2010	2020	2030	2050
Total	83.8	60.7	44.3	39.5	39.3	37.3	39.4	54.7	86.1
Youth	78.2	54.6	36.9	29.4	26.7	22.3	17.6	17.4	16.7
Old Age	5.7	6.1	7.4	10.1	12.6	14.9	21.8	37.3	69.4

Motivation

Population Aging in Korea

• The time span during which the ratio increased from 7% to 14% will be only 18 years in Korea, while that was 45 years in U.K., 85 years in Sweden, and 115 years in France

International Comparison of Aging

	Japan	U.S.A	U.K	France	Germany	Italy	Korea
7%	1970	1942	1929	1864	1932	1927	2000
14%	1994	2013	1976	1979	1972	1988	2018
20%	2006	2028	2021	2020	2012	2007	2026
Years spent (7%-14%)	24	71	47	115	40	61	18
Years spent (14%-20%)	12	15	45	41	40	19	8

- Retirement and Consumption

Retirement and Consumption

Definition and Data

- Definition of the Retirement

  - self-defined retirement status.

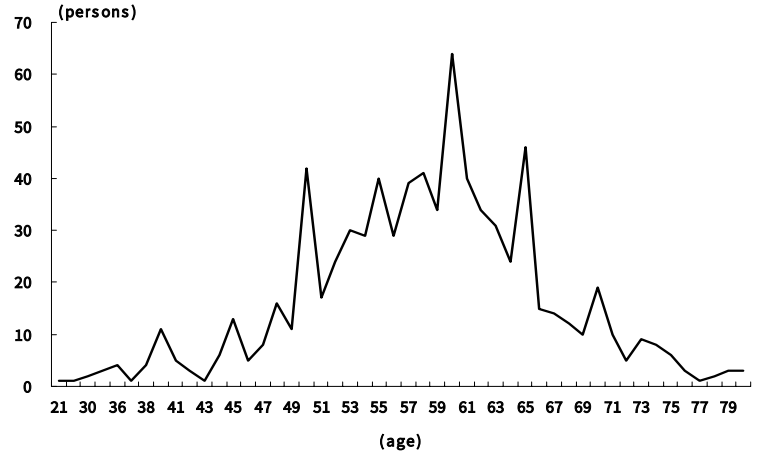
- Data source

  - 1-8th wave of the Korean Labor and Income Panel Study (KLIPS)

Retirement and Consumption

Retirement Age Distribution

<Figure 1> Retirement age distribution



Retirement and Consumption

Pre and Post Retirement Consumption

- The average post-retirement consumptions of total sample slightly decreased.

  - The average post-retirement consumption is 94.2% of average pre-retirement consumption.

<Table 2> Pre and post retirement consumptions

(unit: 10,000 Korean Won, %, household)

	Pre-Ret. Cons (A)	Post-Ret. Cons. (B)	B/A	# of obs.
total	108.58	102.26	94.2	251

Retirement and Consumption

Consumption paths of the early retirees (retiring before age of 60) and normal or late retirees (retiring after age of 60)

- The average post-retirement consumption to pre-retirement consumption is 95.9% for early retirees and 92.1% for normal retirees.
- Relatively high pre-retirement consumption to post-retirement consumption is explained by the age-consumption profile.

  - Early retirees are relatively young and have large consumption demand such as education expenditure for their children.
  - So they can not decrease their consumption after retirement largely

(unit: 10,000 Korean Won, %, household)

	Pre-Ret. Cons (A)	Post-Ret. Cons. (B)	B/A	# of obs.
early = 1	131.55	126.12	95.9	137
early = 0	89.46	82.40	92.1	114

Retirement and Consumption

Consumption Changes by categories

	Pre-Ret. (A)	Post-Ret (B)	(B/A)
Total Consumption	108.58	102.26	94.2
FOOD	36.34	26.91	74.1
FOOD OUT	3.32	2.62	78.8
PUB_EDU	10.83	4.19	38.7
PRI_EDU	3.45	2.53	73.4
CAR	8.70	7.49	86.1
HOUSE	14.47	12.16	84.0
CONDOLENCE	7.66	5.83	76.1
MEDICAL	7.09	7.11	100.2
CULTURE	2.55	2.20	86.2
DURABLE	0.67	0.90	134.0
etc.	13.32	19.59	147.0

Retirement and Consumption

Consumption Changes by categories

- Pre-retirement food expenditure shows more than 20% over the post-retirement food expenditure.

  - This is explained by the home production model.

- This implies that the decrease in food consumptions is not the result of "unanticipated shocks occurring around the time of retirement."

  - Hence, decrease in food consumption is not inconsistent with the consumption smoothing that the life-cycle hypothesis predicts.

Retirement and Consumption

Consumption Changes by categories

- Educational expenditures also fall sharply at the time of retirement.
  - More than 50% of educational expenditures decrease.
  - Decrease in the educational expenditures may be due to the decreases in the number of children in school ages
- This also implies that the decrease in educational expenditures is not inconsistent with the life-cycle hypothesis.

Retirement and Consumption

Consumption Changes by categories

- Except the food consumptions and educational expenditures, average post-retirement consumption is 101.5% of average pre-retirement consumption.
  - retirees, for the most part, maintain their actual level of consumption of all other consumption categories.
- Thus, we can provisionally conclude that consumption decline at retirement is not inconsistent with the typical life-cycle model in which agents are rational and forward looking.

Retirement and Consumption

Panel Regression

Consumption function

$$\log c_{i,t} = \alpha_{i,t} + b_1 age_{i,t} + b_2 \log y_{i,t} + c_i X_{i,t} + d_i RETIRE_{i,t} + \varepsilon_{i,t}$$

Retirement and Consumption

Panel Regression

< Table 5> Description of Variables

RETIRE	Self-defined retirement status(1= retire, 0 =Not Retire)
CONS	Average Monthly total consumption
AGE	Age of the household head
SEX	Sex of the household head (1 = Male , 0 = Female)
EDU	Years of education
SPOUSE	Whether spouse live together or not (1= live together)
NUM	Number of dependent.
BADHEAL	Health Status (1= Bad, 0 = Not Bad)
HOUSEOWN	Whether household have their own house (1= Own, 0=Not Own)
IMMOVABLES	Whether household have their own immovable properties except their own house (1=Own, 0= Not Own)
Log(ASSET)	Logarithm of household cash assets
Log(Income)	Logarithm of average monthly income

Retirement and Consumption

Panel Regression

	Pooled Reg.	BGE	WGE
Constant	2.7025 ***	3.4681 ***	0.0248
	(0.7597)	(1.1580)	(0.0675)
AGE	0.0154	-0.0171	0.0456
	(0.0247)	(0.0380)	(0.0583)
AGE^2	-0.0260	0.0013	-0.0235
	(0.0198)	(0.0306)	(0.0425)
SEX	-0.0161	0.0331	
	(0.0557)	(0.0866)	
EDU	-0.0341 ***	0.0289 ***	0.0330
	(0.0035)	(0.0053)	(0.0259)
SPOUSE	0.1710 ***	0.1039	0.0585
	(0.0524)	(0.0848)	(0.0928)
NUM	0.0151	0.0209	-0.0272
	(0.0118)	(0.0198)	(0.0182)

Retirement and Consumption

Panel Regression

	Pooled Reg.	BGE	WGE
BADHEAL	0.0299	0.0246	0.0020
	(0.0304)	(0.0653)	(0.0310)
HOUSEOWN	0.0350	-0.0179	0.0119
	(0.0324)	(0.0553)	(0.0466)
IMMOVABLES	0.1039 ***	0.0622	0.0786 *
	(0.0336)	(0.0645)	(0.0404)
Log(ASSET)	0.0188 ***	0.0230 ***	0.0057
	(0.0041)	(0.0083)	(0.0044)
Log(INCOME)	0.1585 ***	0.2353 ***	0.0911 ***
	(0.0115)	(0.0250)	(0.0109)
RETIRE	0.1724 ***	0.1039	0.0831 **
	(0.0283)	(0.0815)	(0.0377)
Adj. R-square	0.4818	0.6934	0.0813

Note: standard errors in ( ). *: 10%, **: 5%, ***: 1% significance level

Retirement and Consumption

Panel Regression

- Major Findings;
  - RETIRE dummy has the positive sign and significant in the pooled regression and within-groups estimation.
  - After controlling the household characteristics, retirement of the household heads increase the household consumption in Korea.
- In other hands, the size of the consumption increase caused by the household heads' retirement seem to be very small.
  - Consumptions of the amount of about 10,900-12,000 Korean Won (about 12 US$ per month) are increased by the retirement of the household heads.

Retirement and Consumption

Provisional conclusions

- The results are as follows;
  - We could find retirement consumption puzzle in Korea.
  - Consumption decline at retirement is not the result of "unanticipated shocks occurring around the time of retirement", and can be explained by the home production model of lifecycle or the changes in characteristics of household.
  - After controlling the household characteristics that affect household consumption, retirement of the household head even increased the household consumption.

Retirement and Consumption

Provisional conclusions

- Unlike the other countries such as USA and UK, in Korea, retirement of the household head encourage the consumption increase after controlling the household characteristics that affect household consumption.

- This can be explained by
  - household composition
  - Familial transfer
  - high saving rates

- Retirement decision and Consumption

Retirement Decision and Consumption

- More important is the interdependence of two decisions on when to retire and how much to consume after retirement.

  - Early retirement decision may induce post-retirement consumption to decrease in order to compensate for the decline of the post-retirement earnings due to the early retirement.

Retirement Decision and Consumption

results of the 2-stage switching regression

<Table 10> Probit Analysis of the Retirement Decision

	Early =1	
	Coefficients	Standard Errors
constant	49.1841	9.0365 ***
AGE	-0.8718	0.1523 ***
SEX	0.8390	0.6808
EDU	-0.0583	0.0575
SPOUSE	-0.4648	0.5832
NUM	-0.4999	0.2277 **
BADHEAL	0.0754	0.4449
HOUSEOWN	0.6445	0.4663
IMMOVABLES	0.2055	0.5804
Log(ASSET)	-0.0196	0.0576
ECON	0.1724	0.4180
Log(EAR_INC)	1.5708	1.9040
Log(NOR_INC)	-1.2156	1.9893
-2 Log-Likelihood	-32.2811	

Note: standard errors in ( ). *: 10%, **: 5%, ***: 1% significance level

Retirement Decision and Consumption

results of the 2-stage switching regression

<Table 12> OLS Estimation of Pre-and Post Retirement Consumption

	Pre-Retirement Consumption		Post-retirement Consumption	
	Early = 1	Early = 0	Early = 1	Early = 0
constant	2.7142 ***	1.8338 ***	3.7751 ***	2.8017 ***
	(0.7813)	(0.5267)	(0.5864)	(0.5908)
AGE	-0.0004	-0.0088 *	-0.0322 ***	-0.0159 **
	(0.0156)	(0.0072)	(0.0117)	(0.0081)
SEX	0.0388	0.0307	0.0901	0.0264
	(0.1471)	(0.1112)	(0.1104)	(0.1249)
EDU	0.0280 ***	0.0209 **	0.0265 ***	0.0152
	(0.0144)	(0.0083)	(0.0078)	(0.0093)
SPOUSE	0.1404	-0.0156	0.1702 *	0.0219
	(0.1206)	(0.0824)	(0.0904)	(0.0927)
NUM	0.1449 ***	0.1118 ***	0.0438	0.1464 ***
	(0.0483)	(0.0303)	(0.0362)	(0.0340)

Retirement Decision and Consumption

results of the 2-stage switching regression

	Pre-Retirement Consumption		Post-retirement Consumption	
	Early = 1	Early = 0	Early = 1	Early = 0
BADHEAL	-0.0651	-0.0135	-0.0102	0.0004
	(0.0894)	(0.0665)	(0.0670)	(0.0749)
HOUSEOWN	-0.1107	0.0364	-0.0823	-0.0473
	(0.0847)	(0.0659)	(0.0636)	(0.0743)
IMMOVABLE	-0.1001	-0.0397	0.0563	-0.0116
	(0.1071)	(0.0764)	(0.0804)	(0.0859)
Log(ASSET)	0.0368 ***	0.0072	0.0139	-0.0277 ***
	(0.0125)	(0.0095)	(0.0094)	(0.0107)
Log(EAR_INC)	0.2644 ***		0.4006 ***	
	(0.0632)		(0.0475)	
Log(NOR_INC)		0.5426 ***		0.4422 ***
		(0.0534)		(0.0601)
LAMBDA	-0.0561	-0.1946 *	0.1072	0.0515
	(0.1364)	0.1090	(0.1007)	(0.1286)
R-square	0.5920	0.8104	0.7450	0.6805

Note: standard errors in ( ). *: 10%, **: 5%, ***: 1% significance level

Retirement Decision and Consumption

results of the 2-stage switching regression

- Major Findings;

- Normal retires' pre-retirement consumption conditioned on the retirement decision decrease while normal retires' post-retirement consumption conditioned on the retirement decision dose not decrease.

- This implies that, due to the retirement decision, the post-retirement consumption to pre retirement consumption may increase.

Retirement Decision and Consumption

results of the 2-stage switching regression

- There is a difference between the case of Korea and the case of USA.

  - According to An and Jeon(2005), retirement decision can explain the retirement consumption puzzle in USA

  - the post-and pre-retirement consumption ratio conditioned on the early retirement decision is lower than that unconditioned on the early retirement decision

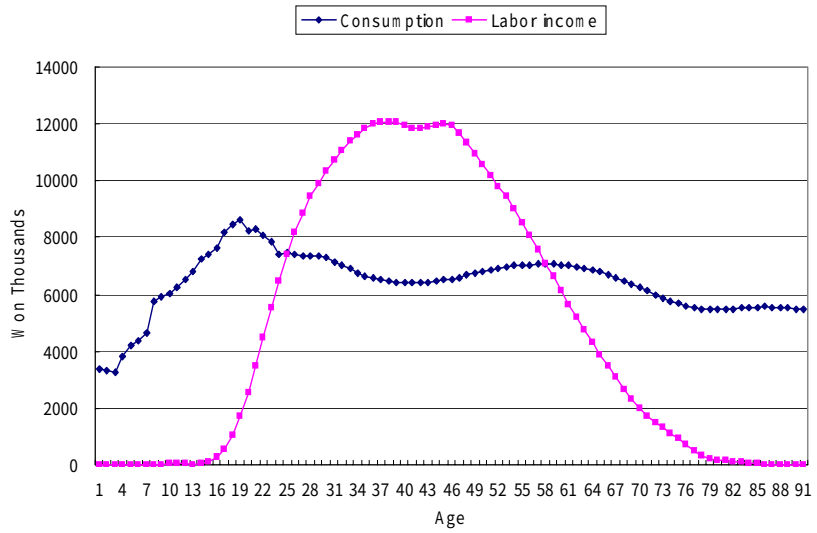
- This difference may be caused by the differences of the saving rates, household structure, and etc.

- Retirement Consumption Puzzle and NTA

Retirement consumption puzzle and NTA

- Above results can be resolved using the National Transfer Account in Korea.
- According to the NTA in Korea,
  - The lifecycle surplus becomes the largest between mid thirties and mid forties when production is largest, while lifecycle deficit appears in the period of the young and the old.
  - education shows the highest level in the late teen
  - The lifecycle reallocation compensating for the lifecycle deficits is mostly led by the transfer in Korea.
  - The share of the private transfer outflows appears to be larger.

Retirement consumption puzzle and NTA



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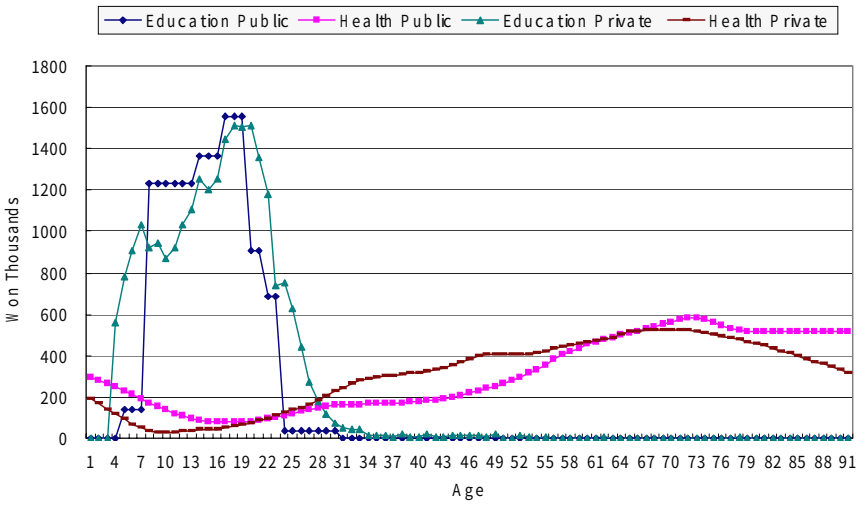

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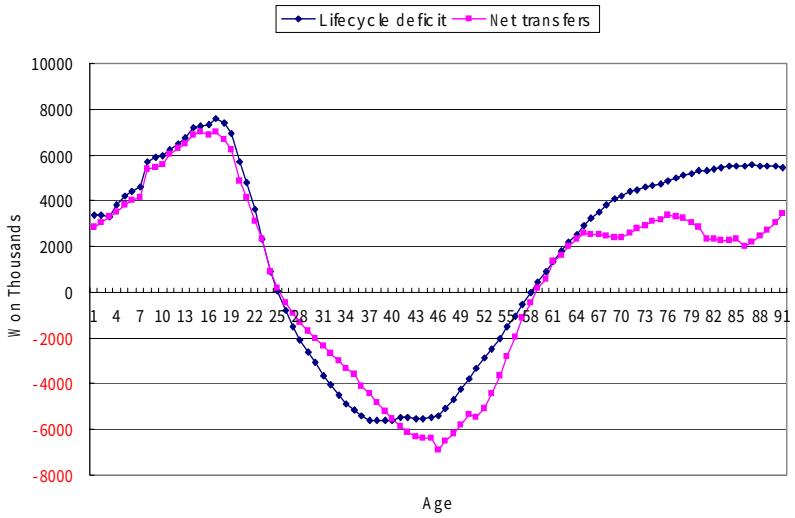

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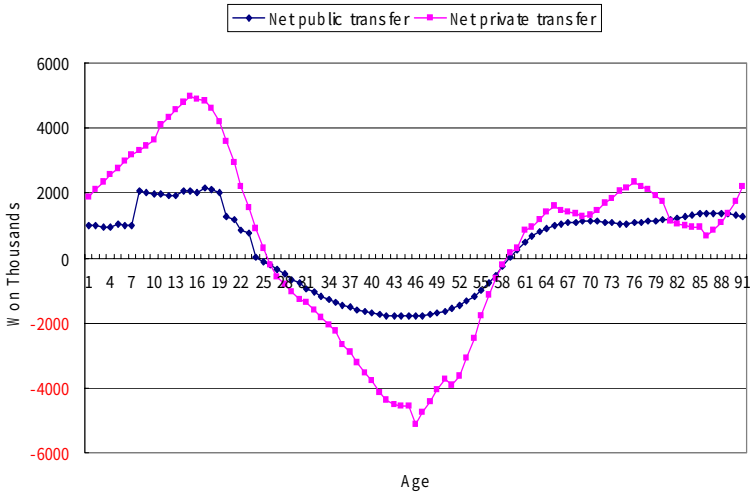

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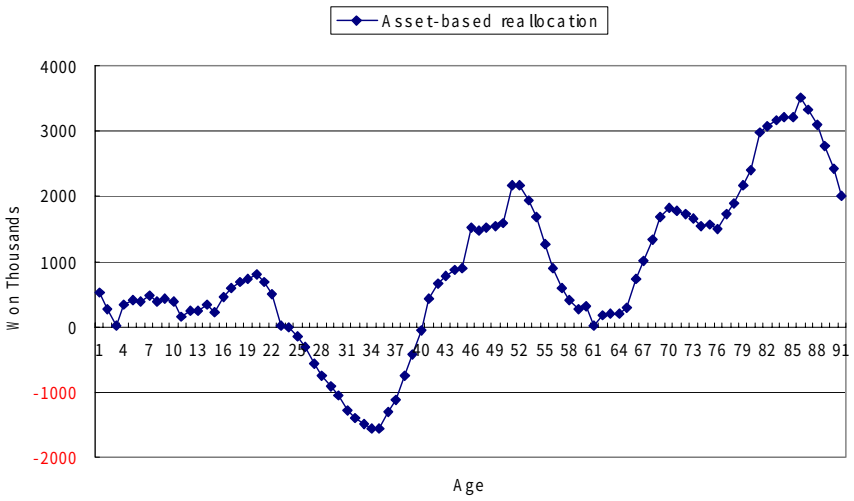

Retirement consumption puzzle and NTA

- Lifecycle deficit may cause the declines in retirement consumption
  - The consumption profile begins to decrease since the late fifties, when the lifecycle deficit becomes to be positive and most household's heads begin to retire.
- Decrease in household's educational expense is the one of the most important reasons for the consumption decline at retirement.
  - NTA results show that educational expense reaches the highest level in the late teen.
  - At the time of household head's retirement, most of children are over twenty years old.

Retirement consumption puzzle and NTA

- As we mentioned above, except food consumption and educational expense, household consumption even increase at retirement in Korea.

  - the Korean elderly are more likely to live in composite household like Taiwan, implying that familial transfer is important.

  - Like Japan and Taiwan, Korea maintains very high saving rates.

  → This may avoid the puzzle, since most Korean households are saving enough to provide adequately for their retirement.