RIETI-JSTAR Symposium

Japan's Future as a Super Aging Society: International comparison of JSTAR datasets

Handout

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Recent Research Development of JSTAR and its Implication for Social Security Policy

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Plan

- Brief JSTAR Backgrounds
- Data Content
- Some Findings Based on JSTAR
  - Labor Supply and Retirement Behavior
  - Asset and Bequest
  - Medical Service Demand and Co-Payment

JSTAR Back Ground

- Started in 2005 pilot studies under then the RIETI Director Yoshitomi's leadership with the big methodological help from the HRS, SHARE, ELSA, and KLoSA group leaders.

- First wave (2007) is based on stratified random sample within 5 municipalities

  Takikawa, Sendai, Kanazawa, Adachi, Shirakawa

- Second wave (2009) adds

  Naha and Tosu.

JSTAR Back Ground (Cont.)

- Third wave (2011) adds

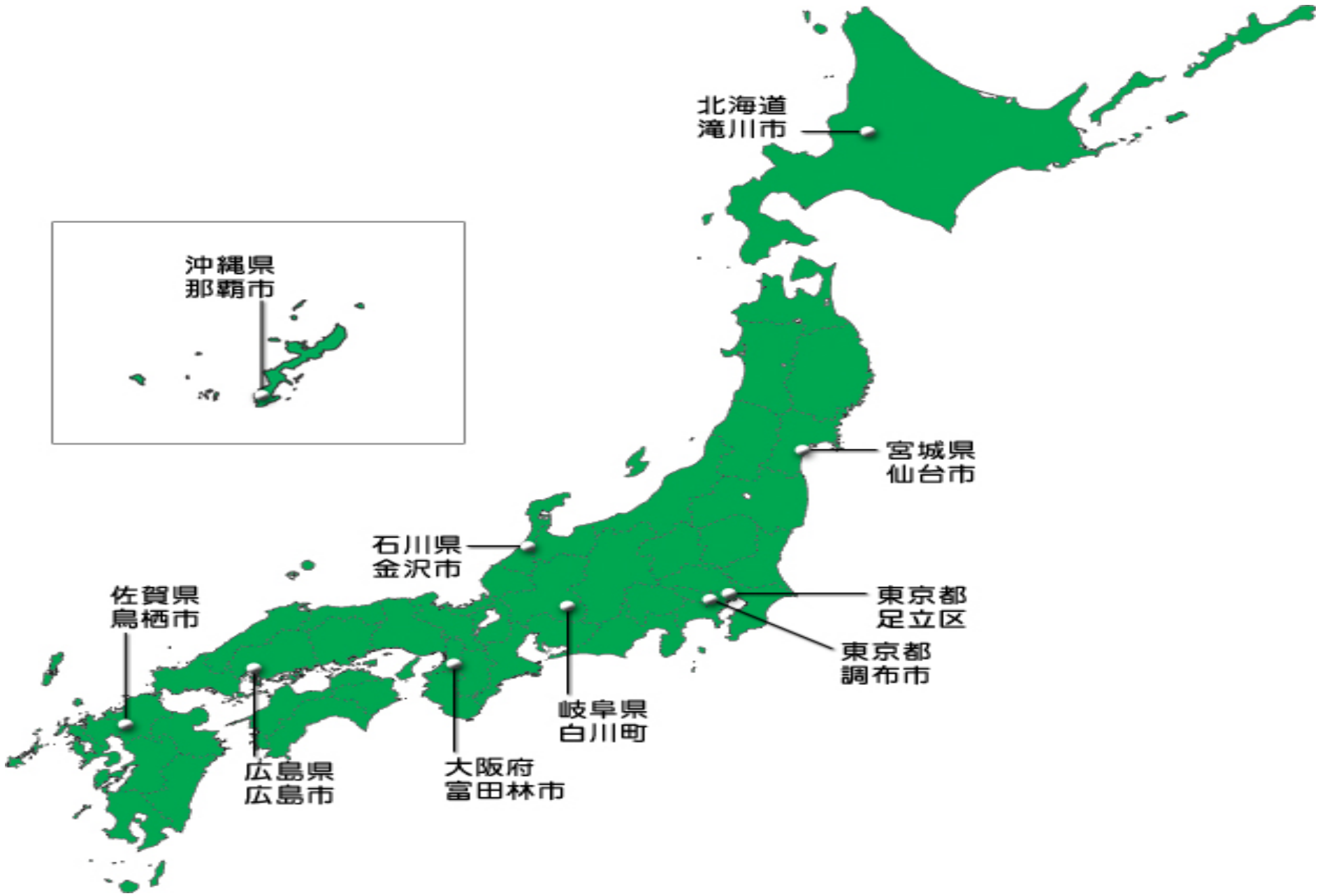
  Chofu, Hiroshima, Tondabayashi
- Fourth wave (2013/2014) continues with the 10 municipalities.

- Generally first round response rate is slightly below 60%
- Second Round and beyond are about 80%

JSTAR Back Ground (Cont.)

- Response Rate is the highest among the Japanese panel data. (Others are about 20% on the comparable grounds.)
- Comparable to the low response rate countries among SHARE countries.
- Much lower than the world record of HRS;

  First time response rate is above 80%.
- Much more effort is required to improve.


北海道
滝川市
沖縄県
那覇市
宮城県
仙台市
石川県
金沢市
佐賀県
鳥栖市
東京都
足立区
東京都
調布市
岐阜県
白川町
広島県
広島市
大阪府
富田林市

JSTAR Back Ground (Cont.)

- Municipalities are selected based on whether we could get agreement on linking the health expenditure record when we receive signed agreement from individuals.

JSTAR Sampling Design

- This sampling has an advantage of having many individuals who face uniform socio-economic environment which can be identified without asking individuals about their socio-economic environment.

JSTAR Sampling Design (Cont.)

- Many of the research questions relate to how individuals make decisions given the environment and how environment impact individual decisions.

- JSTAR is suitable for this purpose.

JSTAR Sampling Design (Cont.)

- A disadvantage of the design is that nationally representative sample cannot be constructed easily.

- We have created weights based on published census data to construct national representative sample.

With Crude Weights: Total Household Deposits

- Comparison to the 2009 National Survey of Family Income and Expenditure (NSFIE).

(unit is yen)

Age	JSTAR 2007 (lower)	JSTAR 2007 (upper)	NSFIE 2009
50-59	8,368,676	8,609,847	8,531,000
60-69	10,237,468	11,100,772	12,404,000

With Crude Weights:
Wages and Salaries of Household Head

Age	JSTAR 2007	NSFIE 2009
50－54	448,279	425,318
55－59	336,097	379,534
60－64	284,169	242,767
65－69	201,146	172,268

With Crude Weights:
Total Household Consumption Head

Age	JSTAR 2007 (lower)	JSTAR 2007 (upper)	NSFIE 2009
50－54	358,816	370,382	369,620
55－59	317,093	323,476	345,057
60－64	298,992	304,752	315,857
65－69	288,151	293,205	291,927
70－74	246,281	256,985	260,740

Sampling Issues

- At most about 10% differences after weighting.
- Finer weighting will improve the match.
- If we cannot, it means that there are some type of individuals we do not have in our sample.
- We will discover this through this research and can aim to sample these individuals.

Content of the JSTAR

- Questionnaire largely designed after SHARE so mostly common across HRS family surveys
- A: Individual Characteristic and Family
- B: Cognitive Ability and others
- C: Work
- D: Health
- E: Income and Consumption/Durables
- F: Grip Strength
- G: Housing and Asset
- H: Medical treatments and Care Service usage

A: Individual Characteristic and Family

- Age, gender, marital status,
- Education level (including spouse's)
- Family composition and age, education level, and economic dependency of children.
- Whether parents are alive and age and the need for caring if they are alive, frequency of contacts, whether they can share the care with others etc.

B: Cognitive Ability and others

- Word recall
- Repeated subtractions
- Percentage calculation
- Measurement of discount factor
- Measurement of risk aversion

C: Work

- Self and Spouse's work status, including hours worked and earning (including past works)
- Content of work
- Job satisfaction
- Existence of the retirement age, expected retirement age if not retired already, and if retired whether job was offered for rehiring upon retirement etc.

D: Health

- Self and spouse's self assessed health,
- Problems with eye-sight, hearing, chewing strength
- ADL (whether one can eat on his/her own, take a bath, change cloth etc) and IADL (whether one can go out using public transportation, make doctor appointments etc.)

E: Income and Asset

- Income from various sources including pension
- Expected pension amount and sources if not yet receiving pension
- Consumption, durable good expenditure and their replacement frequencies.

G: Housing and Asset

- Housing space and its value (including second house)
- Amount of debt
- Amount of different assets
- Economic value of business if self-employed
- Past and expected amount of inheritances and bequests
- Self assessed survival probability from age 75 to 120

H: Medical and Care Service usage

- Diagnosis experience of 20 main diseases, timing, treatment status, types of treatments, expenditure
- Whether received health check-up
- Dentist usage
- Whether care needs are officially assessed, timing and its level, the reason for the care needs, care service usage, expenditure
- Care given by family and acquaintances
- Care given to family members

Different Aspects of JSTAR from other HRS type surveys

- Food intake is measured using a questionnaire validated in Japan.
- For those who gave us a permission we can link the administrative record of their health/ nursing care usage. (65+)
- Also, for those who gave us permission we can link the health examination (height, weight, eye sight, hearing, blood pressure, urianalysis, stool test, X-ray, and various blood tests record) with our data.

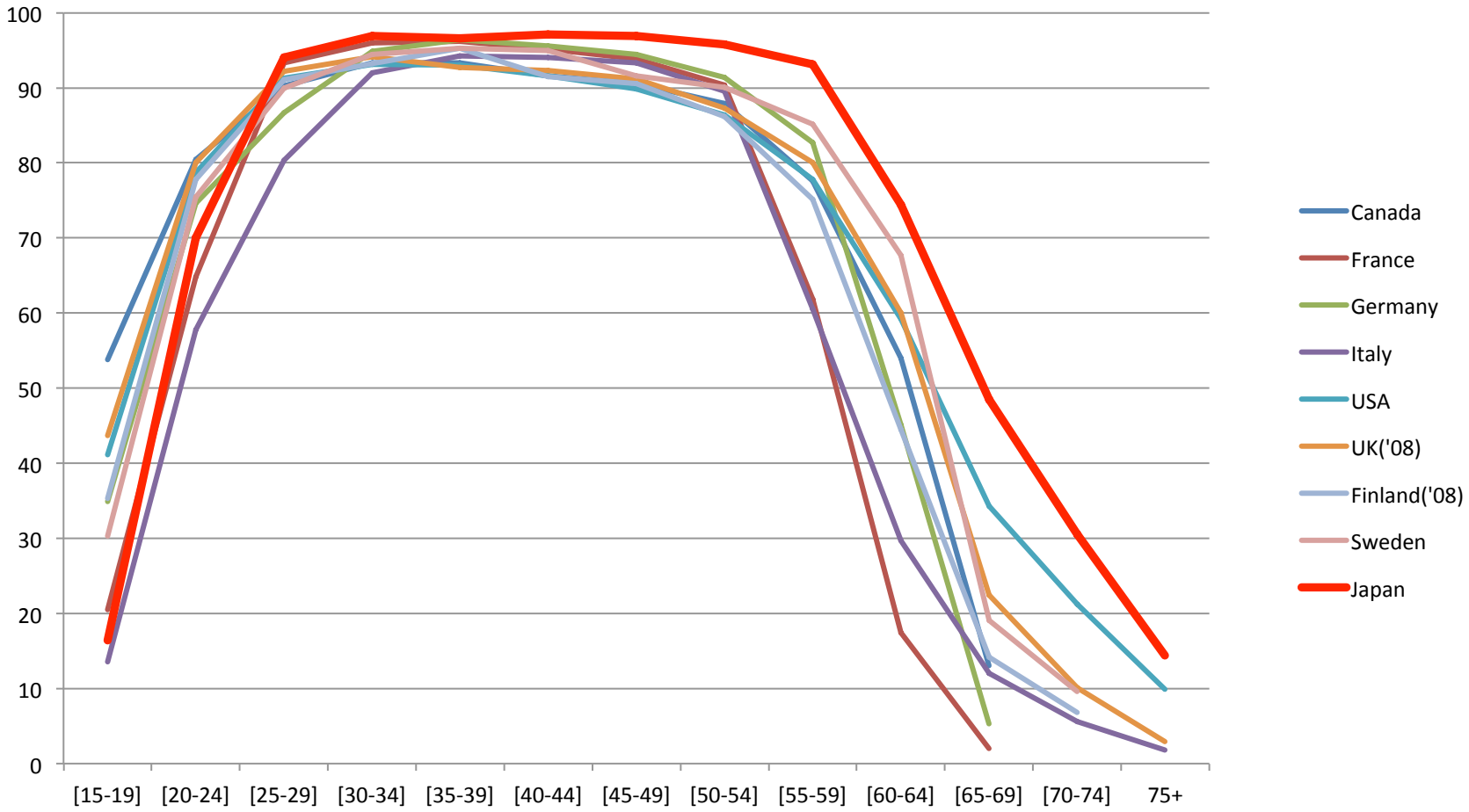
Some Findings Based on JSTAR

- Three implications of aging often discussed:
  - Labor shortage
  - Deterioration of the balance on the pay-as-you-go pension system
  - Increase in health/care service expenditure
- We will examine issues related to these in turn.

Labor Supply

- Among the developed countries, Japanese elderly men and women tend to remain in the labor market longer.
- Finding out how this is possible may be useful for other countries.

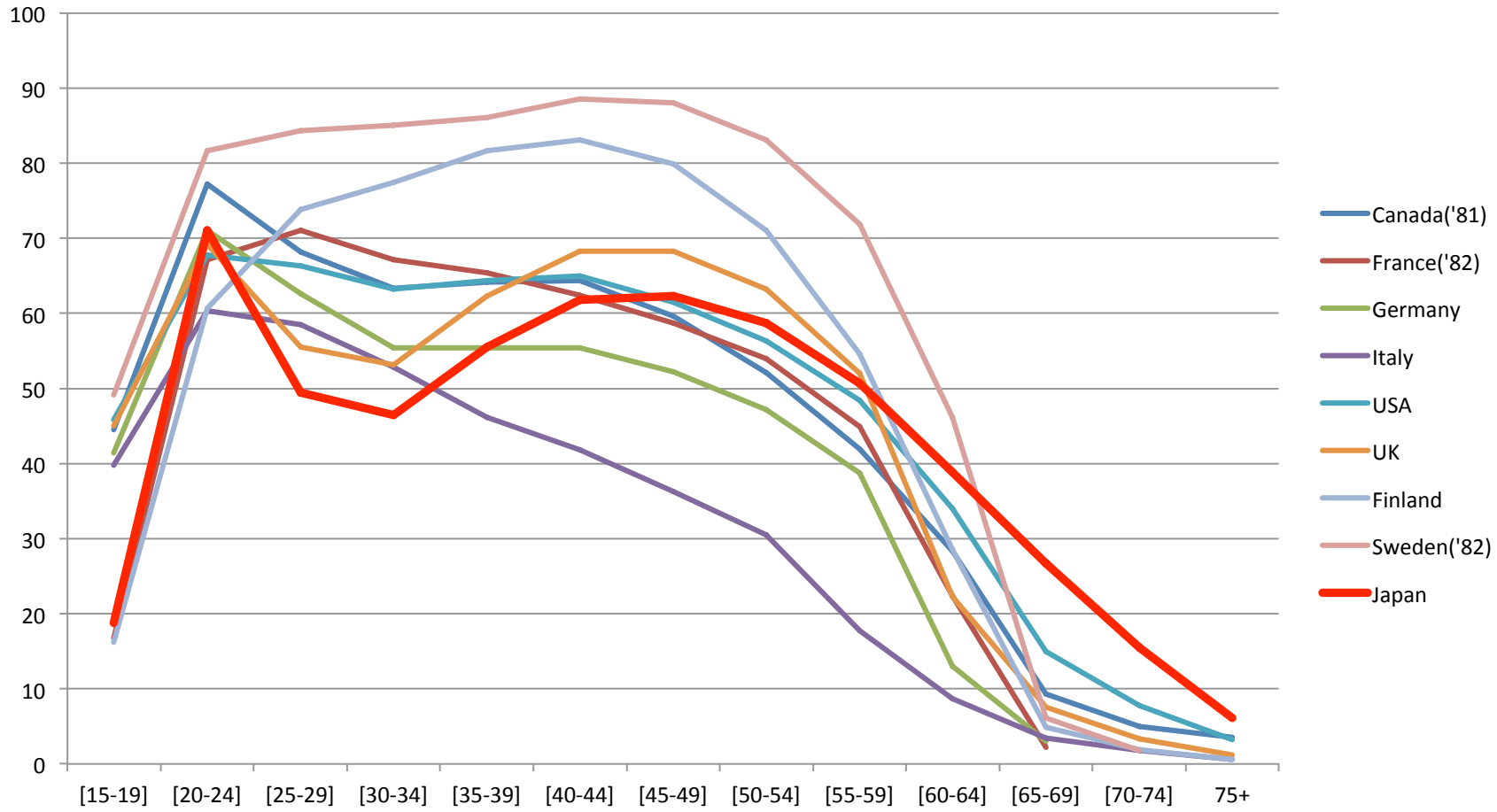
Labor force participation by age (Male) G7+ in 2007



Labor force participation by age (Male)
G7+ 1980 vs 2007

	Canada ('81)	France ('82)	Germany	Italy	USA	UK	Finland	Sweden ('82)	Japan
[50-54]	91 vs 88	91 vs 90	93 vs 91	86 vs 90	89 vs 86	96 vs 87	80 vs 86	93 vs 90	97 vs 96
[55-59]	84 vs 78	77 vs 62	82 vs 83	65 vs 61	81 vs 78	92 vs 80	65 vs 75	87 vs 85	94 vs 93
[60-64]	69 vs 54	39 vs 17	44 vs 45	29 vs 30	60 vs 59	75 vs 60	41 vs 45	68 vs 68	82 vs 74
[65-69]	26 vs 13	5 vs 2	7 vs 5	11 vs 12	29 vs 34	17 vs 22	11 vs 14	16 vs 19	65 vs 49
[70-74]	15			6 vs 6	18 vs 21	10 vs 10	6 vs 7	11 vs 10	45 vs 31
75+	8.1			2 vs 2	9 vs 10	4 vs 3	2 vs -		24 vs 14

Labor force participation by age (Female) G7+ in 2007

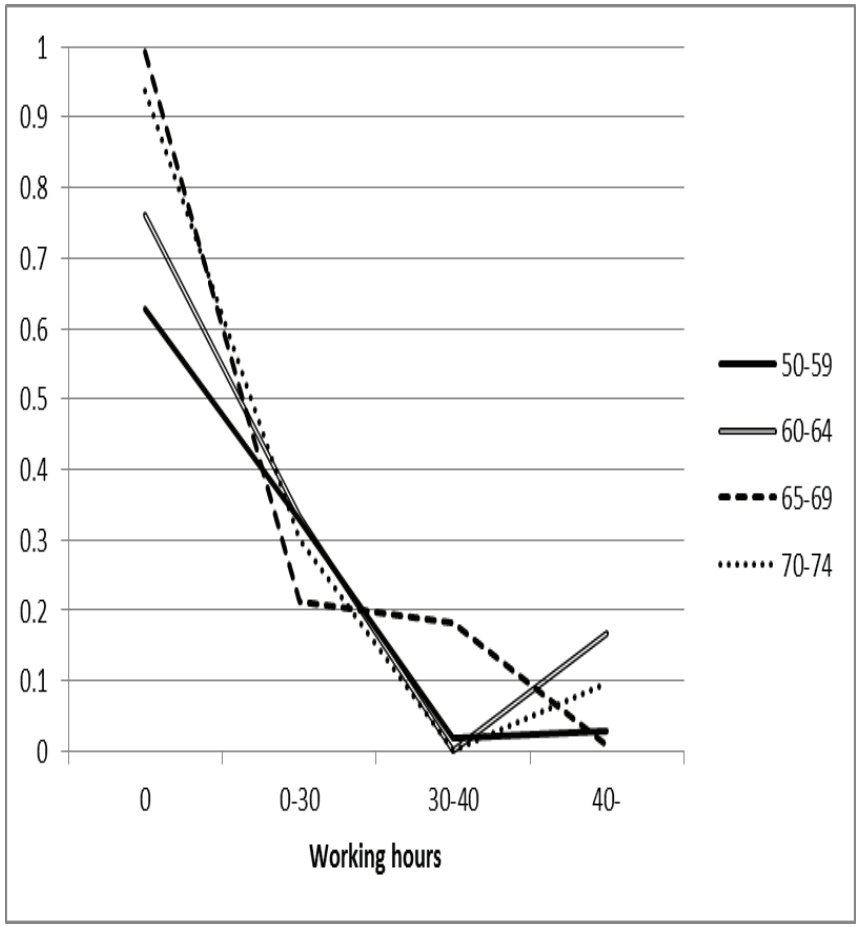


Labor Supply (Cont.)

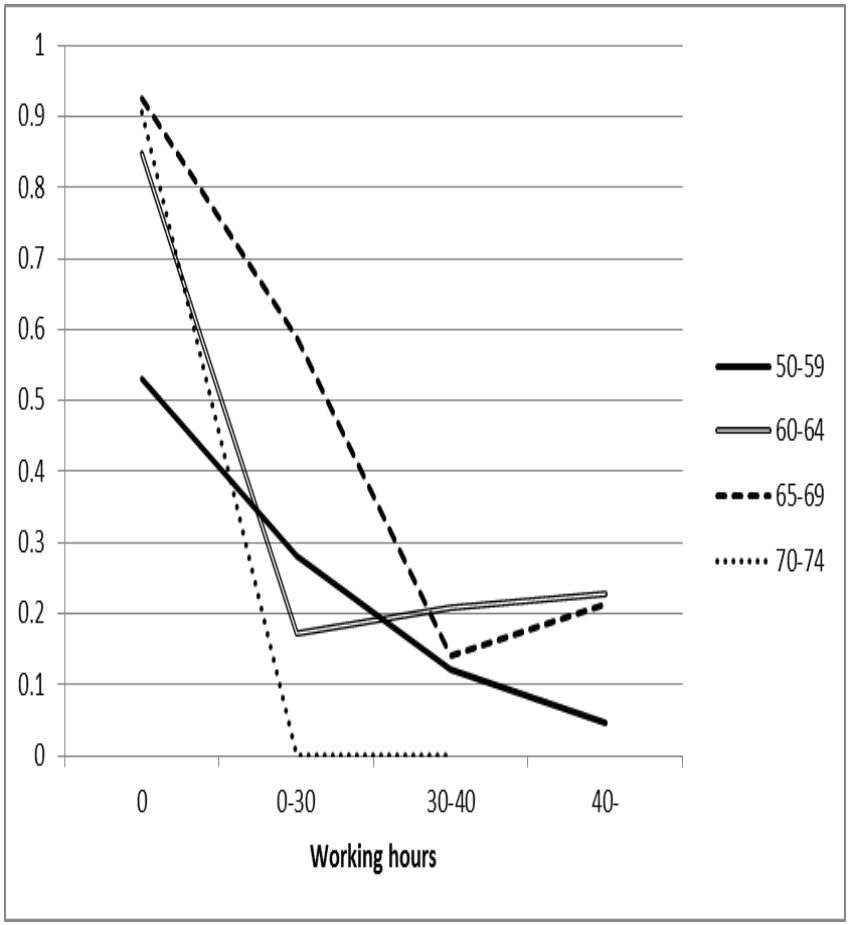
- Ichimura and Shimizutani (2012) examined the labor supply behavior using JSTAR.
- Using JSTAR one can control health related variables, family related variables, in addition to the socio-economic background of the individuals simultaneously.

Retirement Process in Japan: Males

A. Top 50th percentile, male

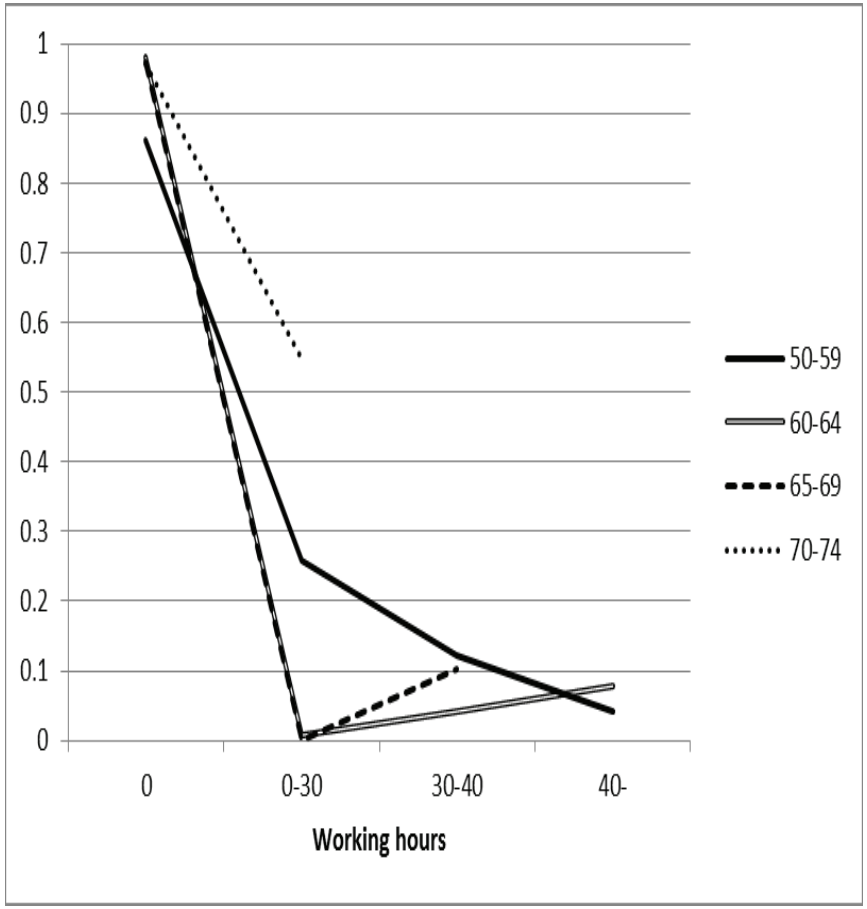


B. Bottom 50th percentile, male

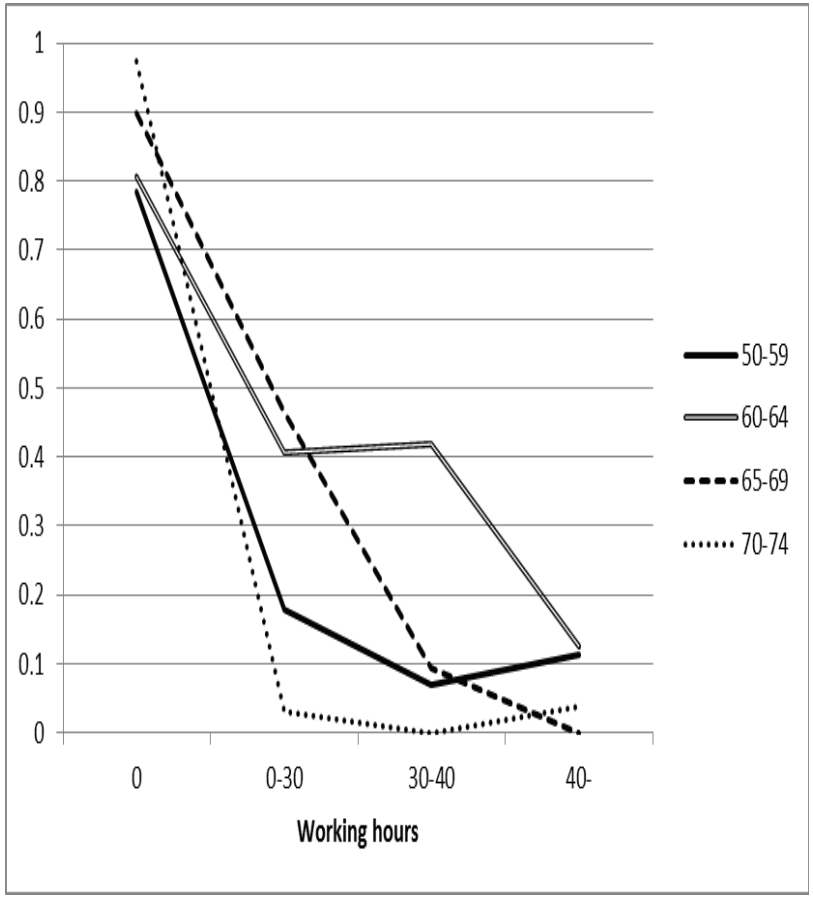


Retirement Process in Japan: Females

A. Top 50th percentile, female



B. Bottom 50th percentile, female



Labor Supply (Cont.)

Main findings are:

- Like Banks and Smith (2006) we find that retirement is a process rather than an event.
- The processes differ mainly due to family factor for men and socio-economic factor for women.

Labor Supply (Cont.)

- For men, better indices lead to higher probability of retirement at all ages except 65-69.
- For women, better indices lead to higher probability of retirement at ages 50-59 and 70-74 but for 60-69, they lead to lower probability of retirement.

Labor Supply: Policy Implications

- When the pension eligibility age is raised to above 65, those who currently choose to retire are likely required to work.
- For both men and women, individuals with lower indicators in all three aspects are more likely to be affected by this policy because they are more likely to have chosen to retire.

Work Capacity

- Usui, Shimizutani, Oshio (2014) attempts to quantify work capacity of older adults in Japan using JSTAR.
- They first examine the relationship between detailed health statuses and work statuses (full-time, part-time, retired) using individuals in their 50s.
- They then use the health statuses of the individuals in their 60s and the first half of the 70s. (Cutler, Meara and Richards-Shubik (2012))

Simulated Work Capacity

Age Group	# Obs	Actual % Retired	Actual % Part-time	Actual % Full-time	Base age 50-59 Predicted % Retired	Work Capacity	Predicted % Part-time	Part-time Capacity	Predicted % Full-time	Full-time Capacity
(A) Men										
55-59					..	..				
60-64	1,225	20.5%	17.6%	62.0%	4.7%	15.8%	7.0%	-10.5%	88.2%	26.3%
65-69	1,243	48.7%	22.0%	29.3%	6.6%	42.1%	9.0%	-13.0%	84.4%	55.1%
70-74	1,248	67.4%	15.3%	17.3%	10.1%	57.3%	10.1%	-5.2%	79.7%	62.4%
(B) Women										
55-59					..	..				
60-64	1,289	51.9%	27.2%	20.9%	34.6%	17.3%	29.5%	2.2%	36.0%	15.1%
65-69	1,283	70.3%	18.8%	10.9%	38.0%	32.3%	29.1%	10.3%	32.9%	21.9%
70-74	1,356	84.1%	9.9%	6.0%	40.6%	43.4%	28.2%	18.3%	31.1%	25.1%

Work Capacity: Policy Implications

- When the pension eligibility age is raised to above 65, whether it is feasible for many to continue to work is an important issue.
- This paper gets at this question.

Work Capacity: Policy Implications (Cont.)

- Using those in their 50s may not cleanly pick up feasibility aspect of working for women but for men, it may be good.
- Given that women are healthier (live longer) perhaps, one can use the results of men as a lower bound for women.

Work Capacity: Policy Implications (Cont.)

- Given that we cannot force people to work if they cannot work, this raises an issue of how to design a pension system under which the pension eligibility age is self-selected.
- We probably want the penalty of early take up to depend on family, health, and socio-economic conditions.

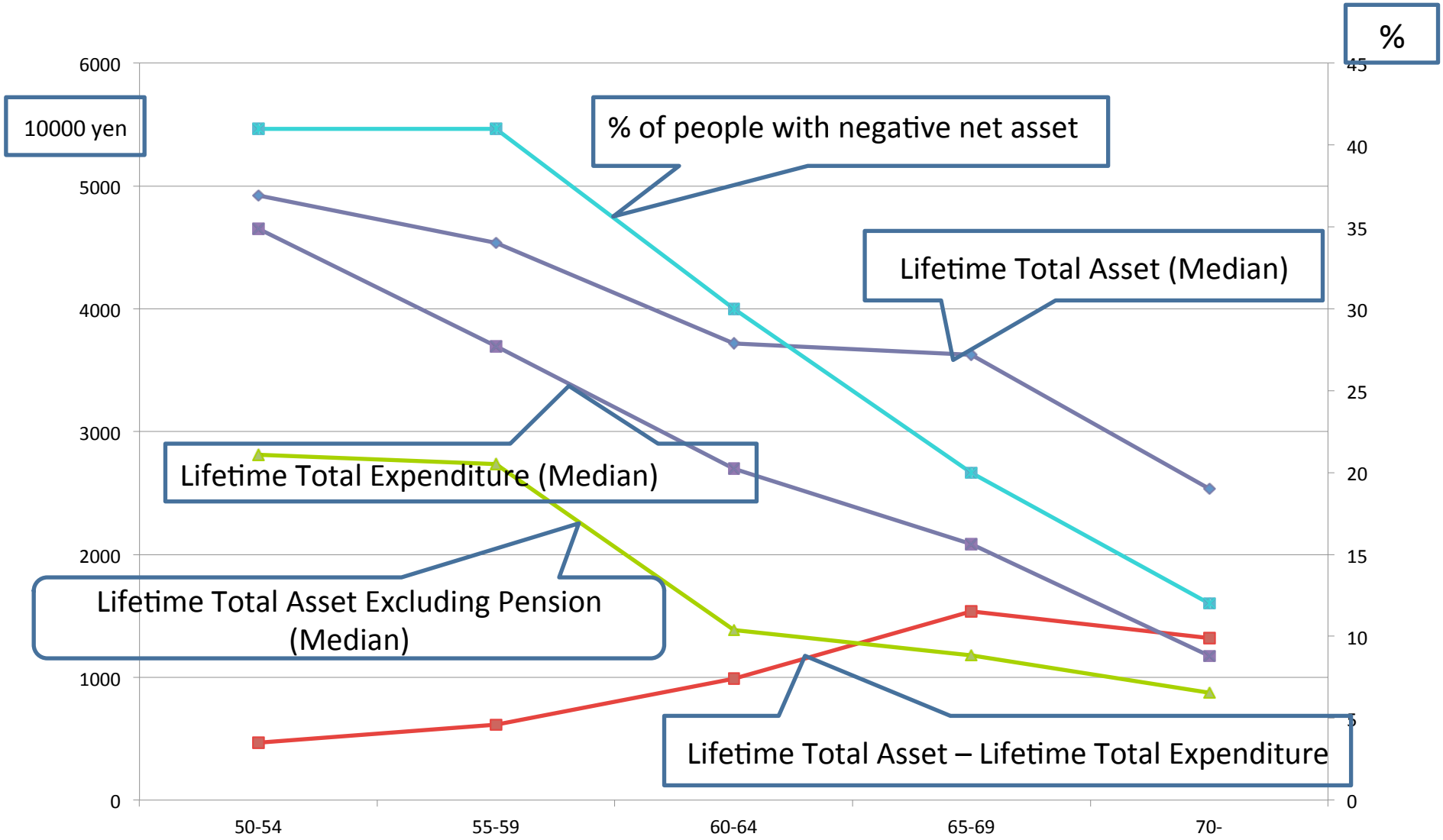
Expected Net Lifetime Wealth by Cohort

JSTAR calculation

	50-59	60-64	65-70	70+
Under 0	41%	30%	20%	12%
Median	690	1216	1500	1356
Mean	1665	2315	2231	2749

Unit:10000 yen

Expected Net Lifetime Wealth by Cohort (Cont.)



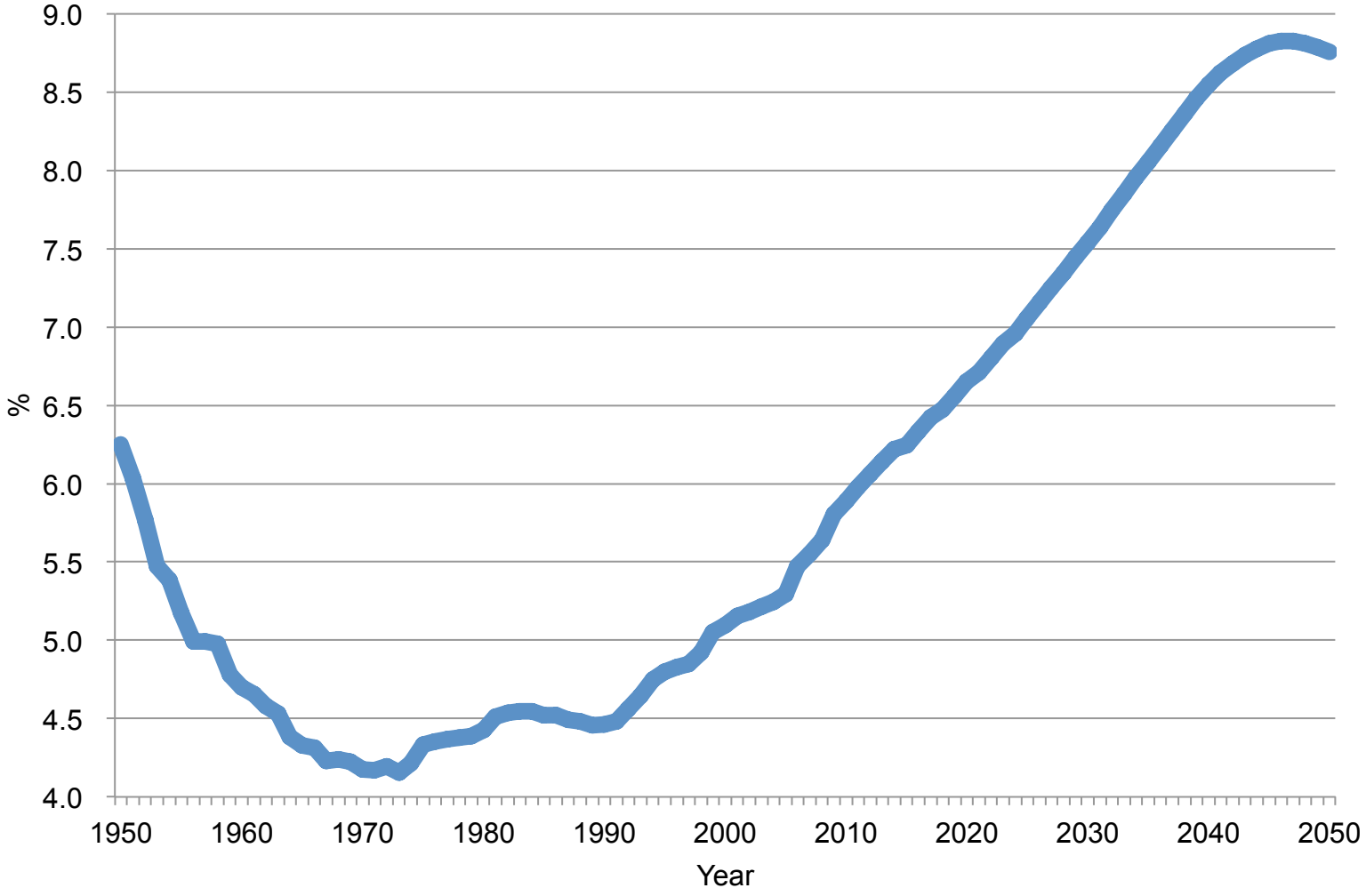
Expected Net Lifetime Wealth: Policy Implications

- Pension is a large fraction (about 50%) of total asset for any cohort.
- Thus raising the eligibility age from 65 by 1 year amount to requiring individuals to save up the equivalent of 50% of annual expenditure if the eligibility age is raised by one year.
- This percentage differ across household types.

Bequest as a Source of Relief?

- Can bequest be a source of relief from a large financial pressure aging places on pay-as-you-go retirement systems?
- To answer this question, Sánchez-Romero, Ogawa, Matsukura (2013) use computable general equilibrium model along with JSTAR as a source to calibrate their model, among other data sources, to obtain the following result:

Annual Bequest Flow as a Fraction of Output, Japan 1950-2050



Source: Sanchez-Romero, Ogawa and Matsukura (2013)

Annual Bequest Flow as a Fraction of Output, Japan 1950-2100

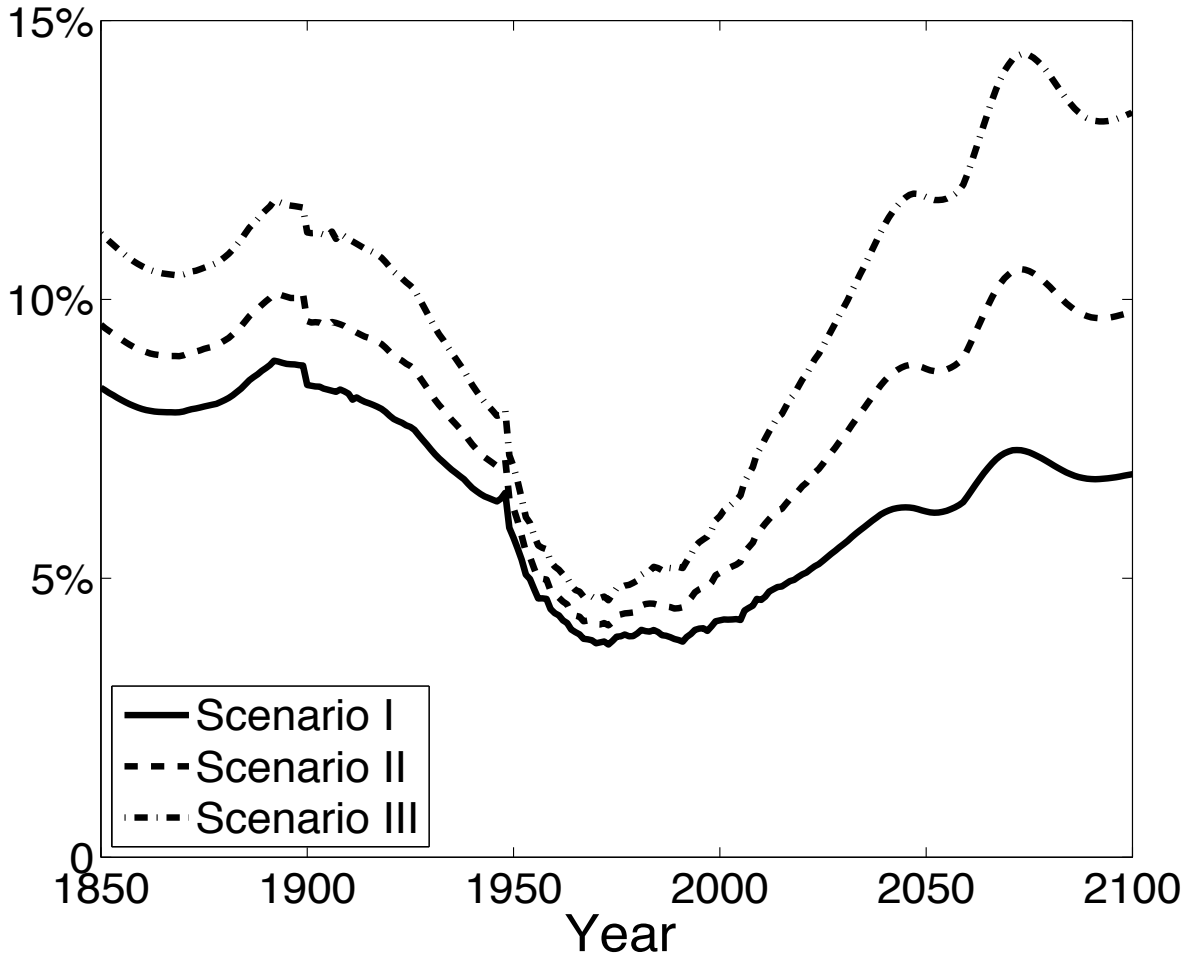


Figure 6: Annual bequest flow as a fraction of output, Japan 1850-2100

Bequest

- Main driver of the increase is the increase in the deaths of wealthy individuals as a fraction of total population.
- The higher increase corresponds to a model with higher bequest motives.
- So we can expect to have a modest relief for some time to come.

Bequest (Cont.)

- In 2014 the fraction is 6.2%.
- Compare this with

  Medical Expenditure/GDP = 10.3%

  Old Age Pension/GDP = 11.2%

  Care service expenditure/GDP = 1.8%
- How much of this translates to tax revenue depends on the tax system and how the wealth distribution is across individuals.

Medical Service Demand and Co-Payment

- Ibuka (2014) examines the impact of a change in co-payment from 30% to 10% when one becomes 70 on the medical service demand by types of medical conditions. (Shigeoka (2013))
- Ibuka finds that the reduction in the co-payment leads to increase in some service usage for some specific illnesses:

Medical Service Demand and Co-Payment (Cont.)

- Joint diseases 3 times/month
- Liver diseases 2 times/month
- Ear diseases 1.3 times/month
- Diabetes 0.53 times/month
- High blood pressure 0.47 times/month
- Hyperlipidemia 0.47 times/month
- Ibuka also shows that the extent of the increase differ depending on patients' income.

Medical Service Demand and Co-Payment (Policy Implication)

- Sometimes an increase in co-payment is suggested as a way to contain medical expenditure.
- The result shows that for these cases, there will be a decrease in the medical service demand.

Medical Service Demand and Co-Payment (Policy Implication)

- There should be some discussion with the medical profession whether the increases in these specific cases should lead to welfare improvement.
- Policy implications will be different depending on the outcome of the discussion.

Summary

- These researches illustrate how JSTAR data have been used.
- Of course all of these research results are tentative and many more works need to be done.
- But I believe these studies give us some specific images about how different aspects of social security policies should take shape.

Summary (Cont.)

- Together, they help us go beyond concerns merely about the budgetary implication of aging society, and to actually begin to think how we should face the aging society with better ideas about how we behave and react to policies.

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