Impact of aging population on household savings and portfolio choice in Japan

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"Aging in Japan: The Impact of the Retirement of Japan's Baby Boomers"
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Introduction

- The demographic impact on financial markets has attracted the attention of both academics and practitioners.
- One commonly expressed view in this context is that "*the aging of the baby boom cohort is a key factor in explaining the (recent) rise in asset values, and by predictions that asset prices will decline when this group reaches retirement age and begin to reduce its asset holdings.*" (Poterba, 2001, p.565).

Previous research

- Theoretical analyses of general equilibrium OLG model, with some calibration exercises, suggest that the demography should affect the rate of return on capital (Abel 2003; Geanakopolos et al. 2004).
- However, empirical evidence are not very clear (Poterba, 2001).
  - See also Bakshi and Chen (1994), Ang and Maddaloni (2005) for supportive evidence.

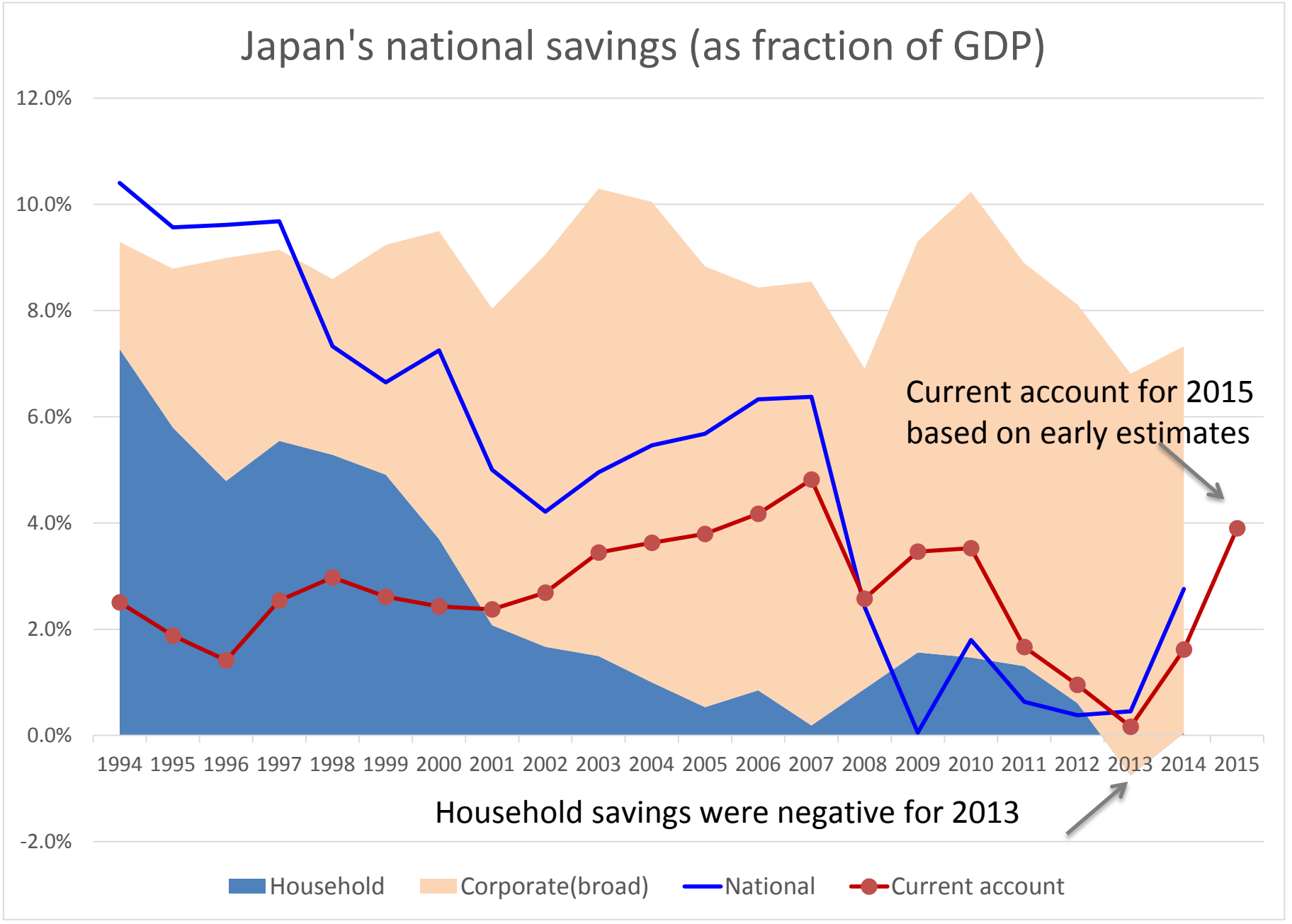
This paper

- We start from household savings, because we believe the dramatic decline in household savings in the early 2000s in Japan has exaggerated the speed of the population aging process.
- The long-run trend will be smoother and more moderate.

This paper (continued)

- We have not observed any significant decline of stock holdings by households despite the dramatic decline of household savings in the early 2000s.
- The decline of household holding of stocks in Japan will be slower than it could have been if the same speed of aging took place in other OECD countries.

2. HOUSEHOLD SAVINGS, CORPORATE SAVINGS, AND NATIONAL SAVINGS


Japan's national savings (as fraction of GDP)
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
-2.0%
1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015
Current account for 2015 based on early estimates
Household savings were negative for 2013
Household
Corporate(broad)
National
Current account

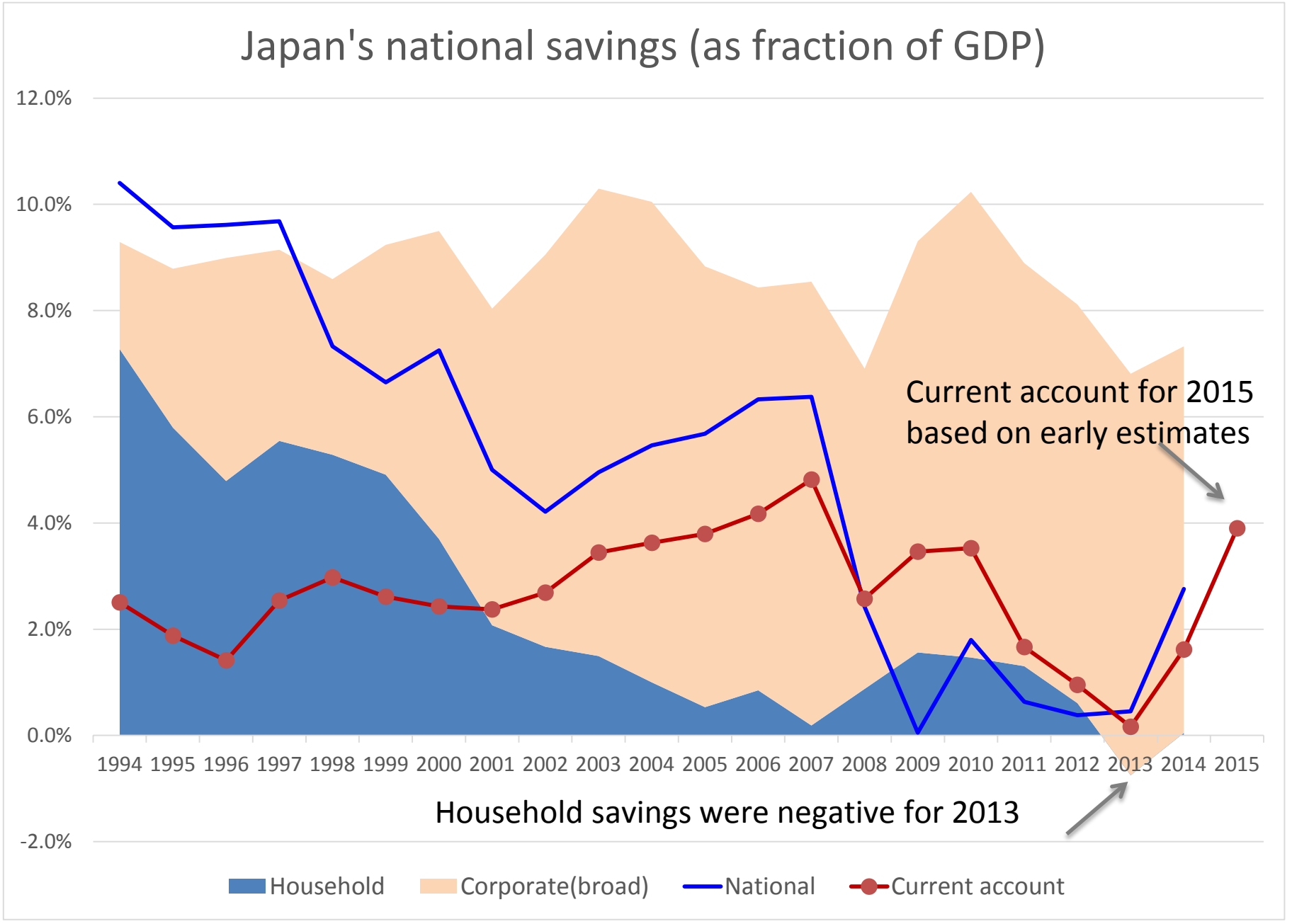
Household and corporate savings

- Household savings (HS) significantly declined in the first half of the 2000s.
- But, HS exhibit no apparent up or down trend since the second half of the 2000s.
- Corporate savings (CS) increased steadily from 1998 to 2004.
- CS have remained at a relatively high level around 7% of GDP for 2005-2014.

Private sector savings

- The decline in HS in the first half of the 2000s had been largely offset by the increase in CS.

- Japan's private-sector savings (HS+CS) have only mildly decreased in the last two decades, by about two percentage points in twenty years.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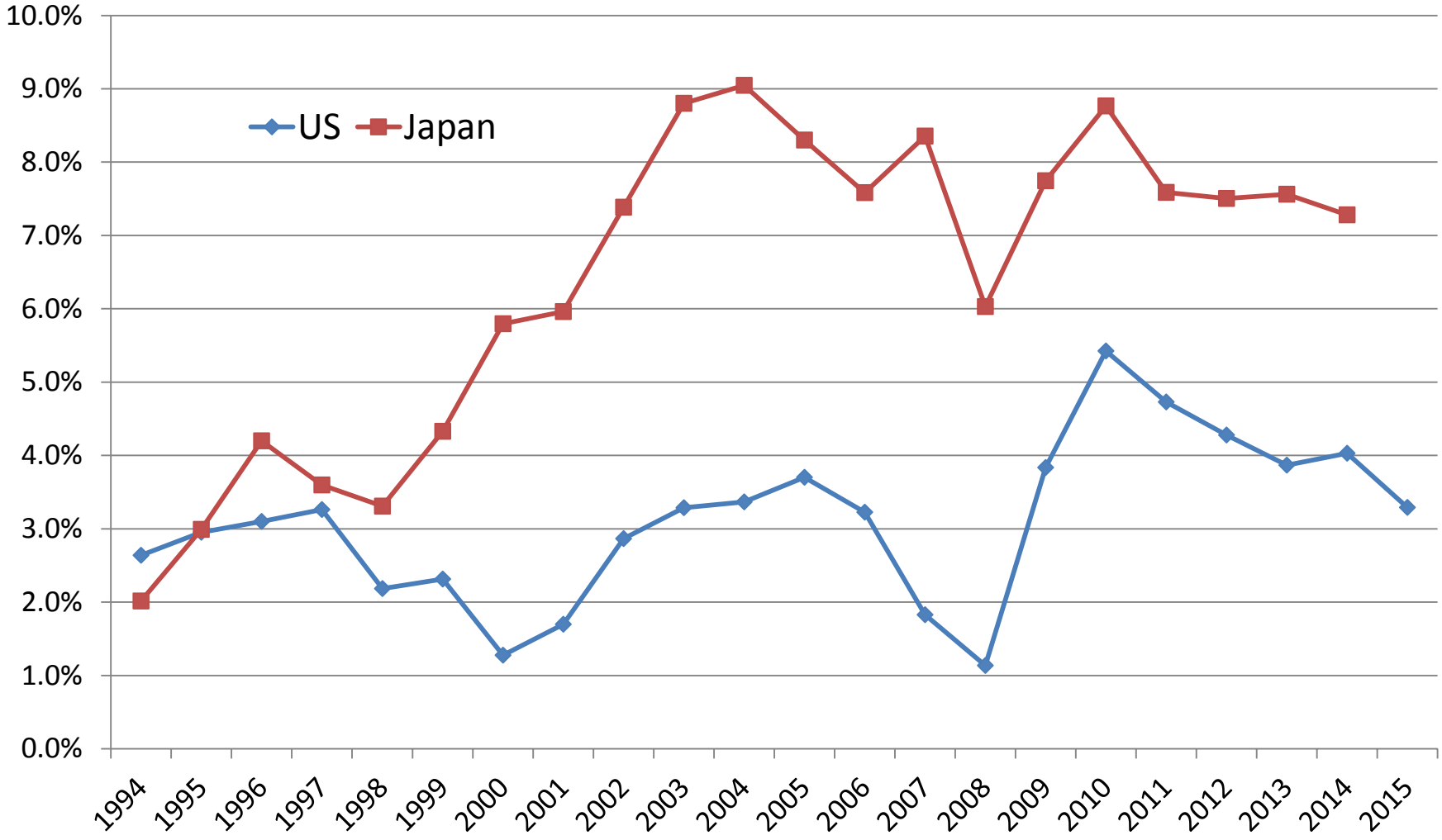
Some important questions (1)

- Does Ricardian equivalence hold?
  - What could happen with HS and CS if the fiscal stimulus responding to the Great Recession had not been as aggressive?
  - If consumption tax rate hikes had been implemented in a more orderly manner, particularly, if the increase of the tax rate from 8% to 10% had not been postponed, what could happen?
    - Originally scheduled in Oct 2015, postponed to Apr 2017, then postponed again … indefinitely?

Some important questions (2)

- Japan's corporate savings have been extremely high, even compared with the post-Great Recession U.S.
- But, we do not have a good theory for corporate savings.
- Corporate veil? (Poterba 1987)
  - If CS had been lower and household income had been higher, could HS be higher?

Corporate Savings as fraction of GDP
US vs Japan

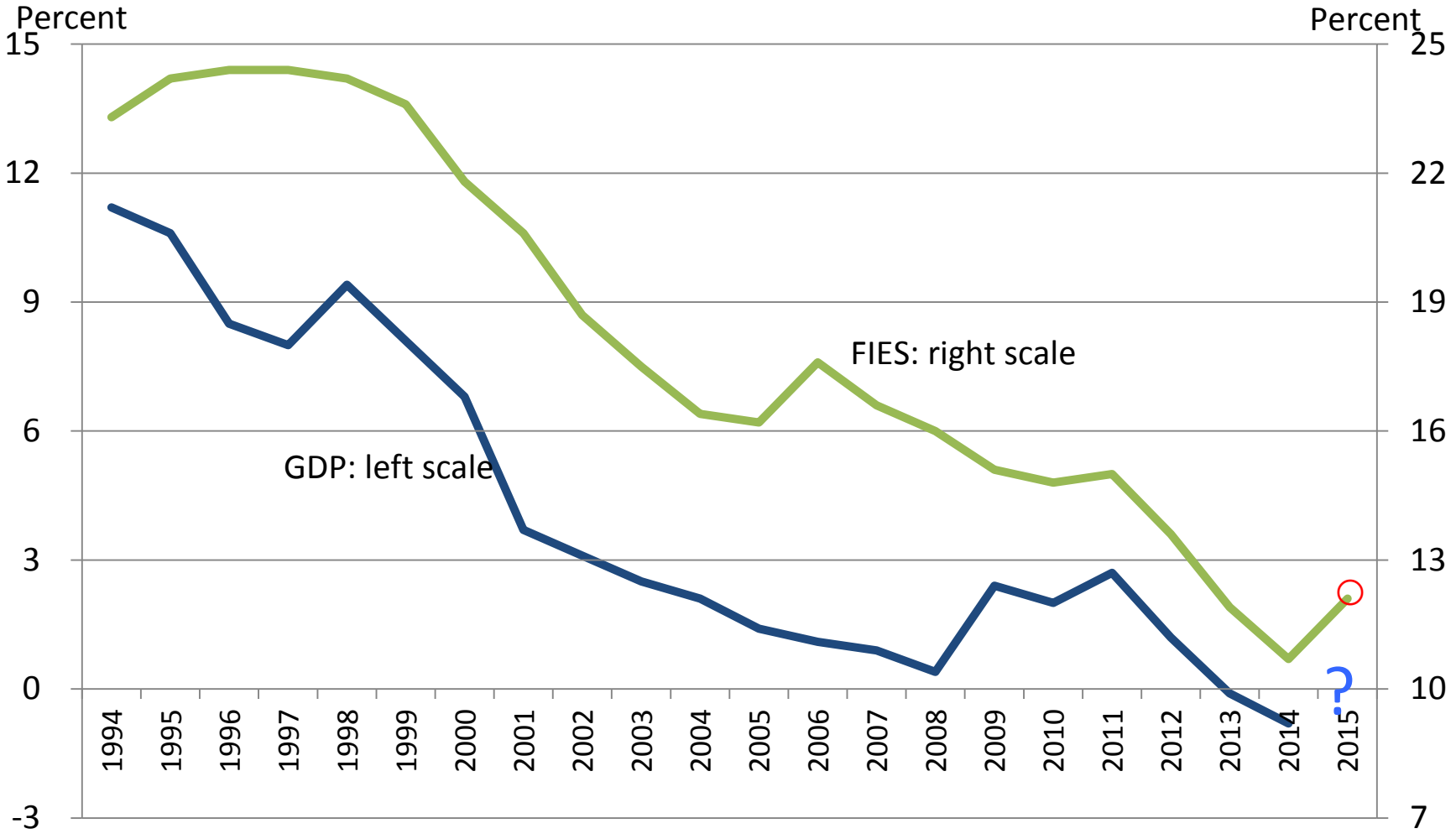


Household savings rates in GDP data vs. semi-micro data (FIES)

- *Family Income and Expenditure Survey* (Kakei-chosa): "FIES data."
- The levels are different, but the movements of the two savings rates are similar.
  - Large declines from the end of the 1990s to 2004.
  - Smaller declines in 2012, 2013, and 2014.
- FIES data suggest we will see a rebound in the GDP savings rate in 2015.

Household savings rates

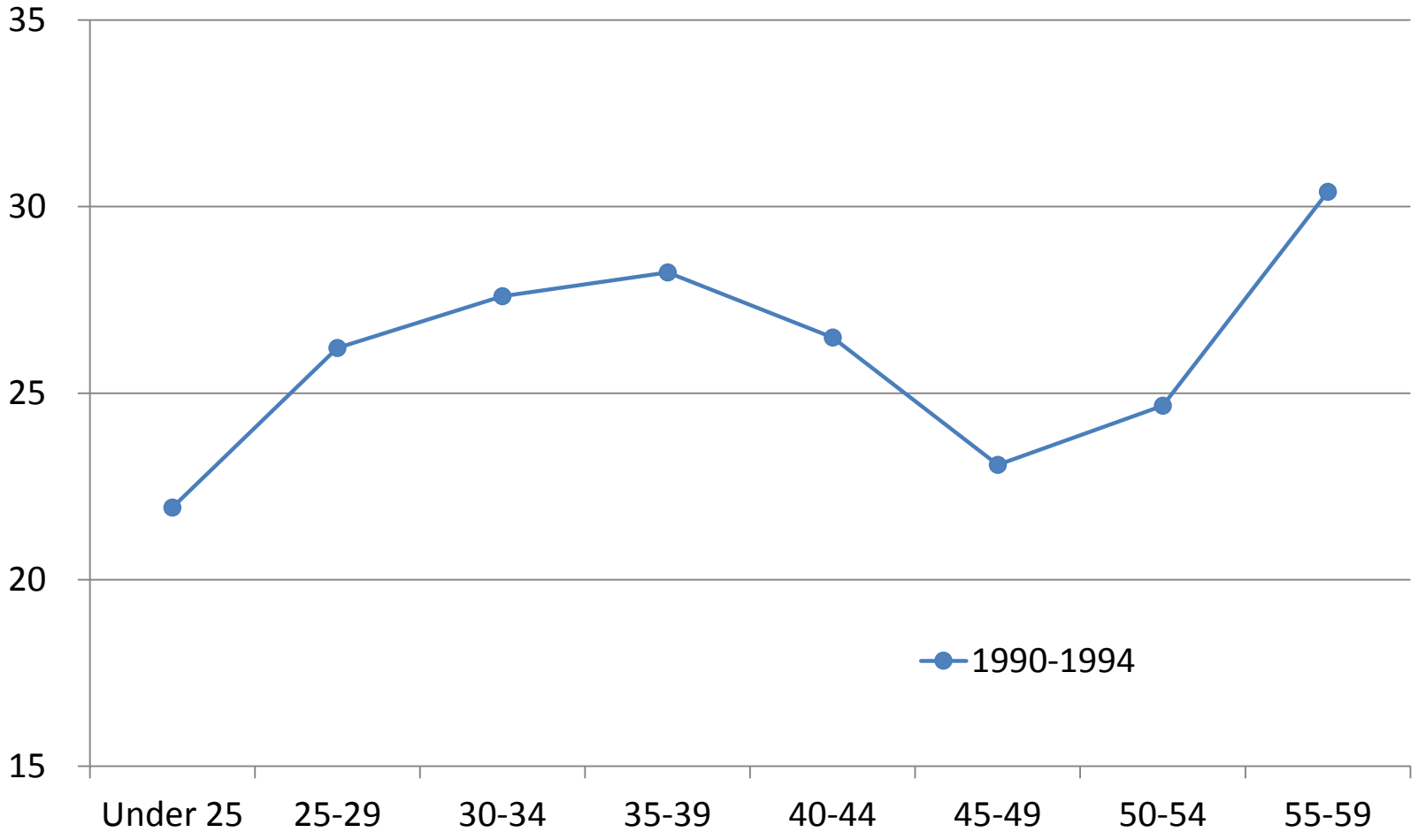
GDP vs. Family Income & Expenditure Survey (FIES)



Age-group savings rates in FIES data

Household savings rates: 1990-2004

5 year average (1)



Age-group savings rates in FIES data

Household savings rates: 1990-2004

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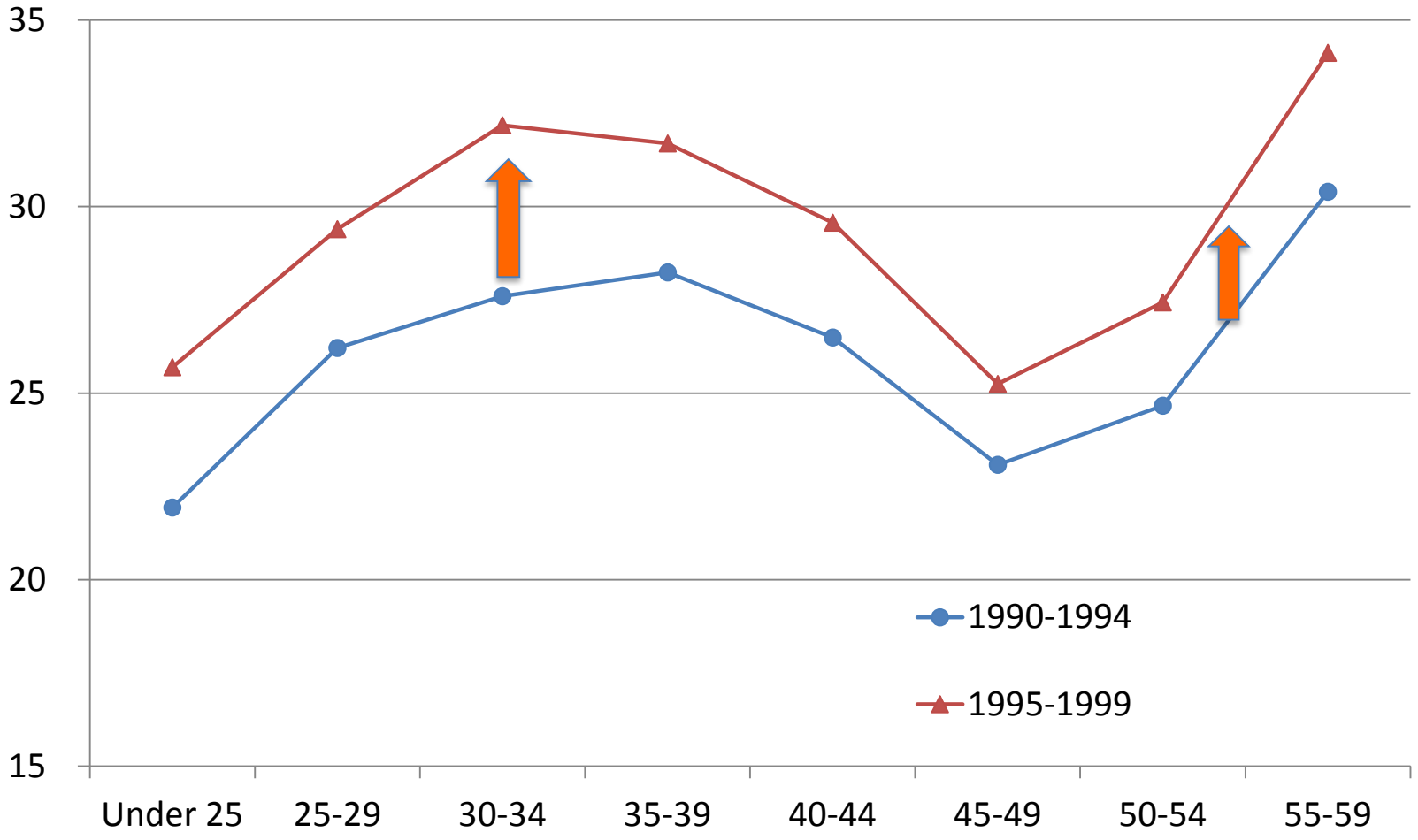
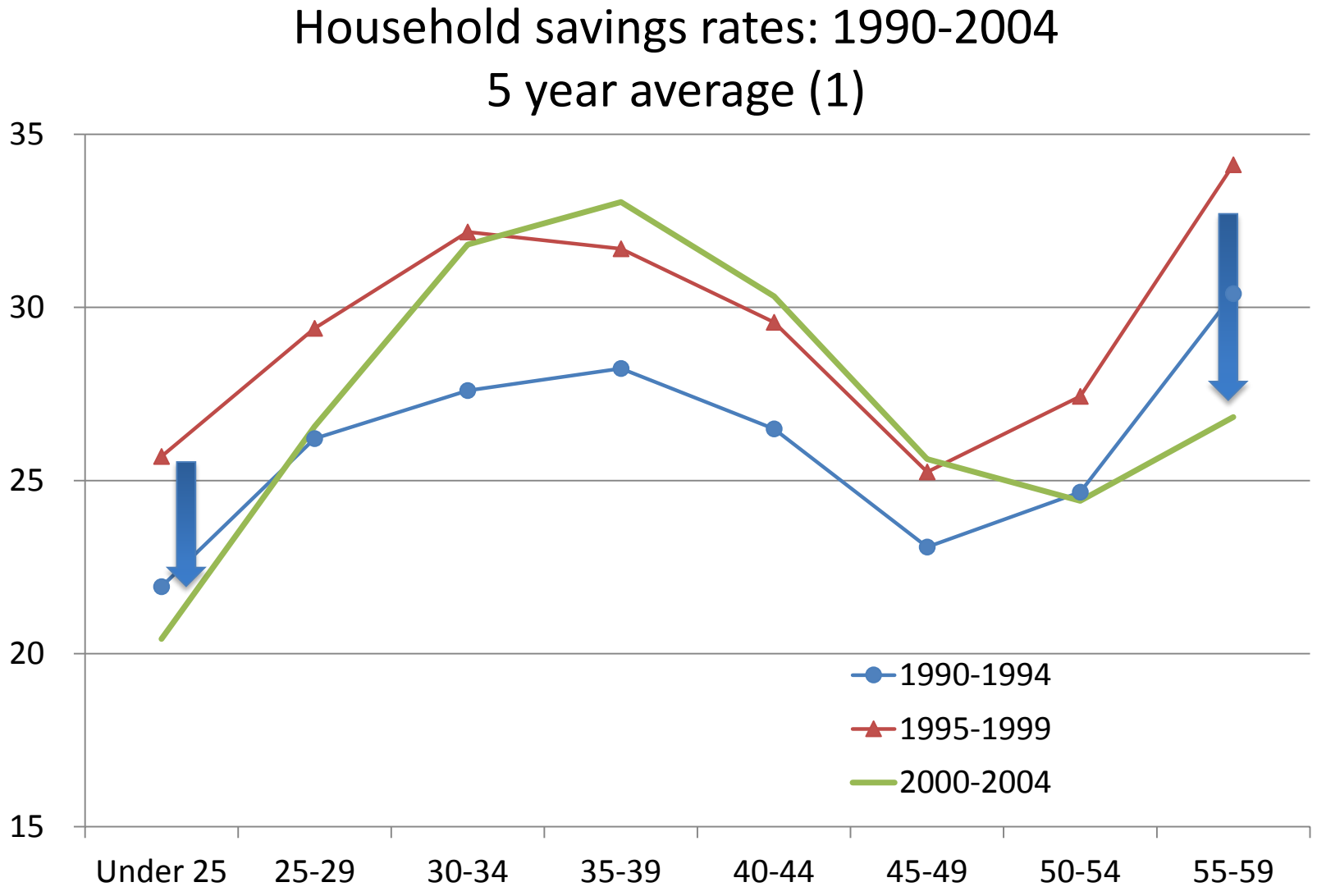
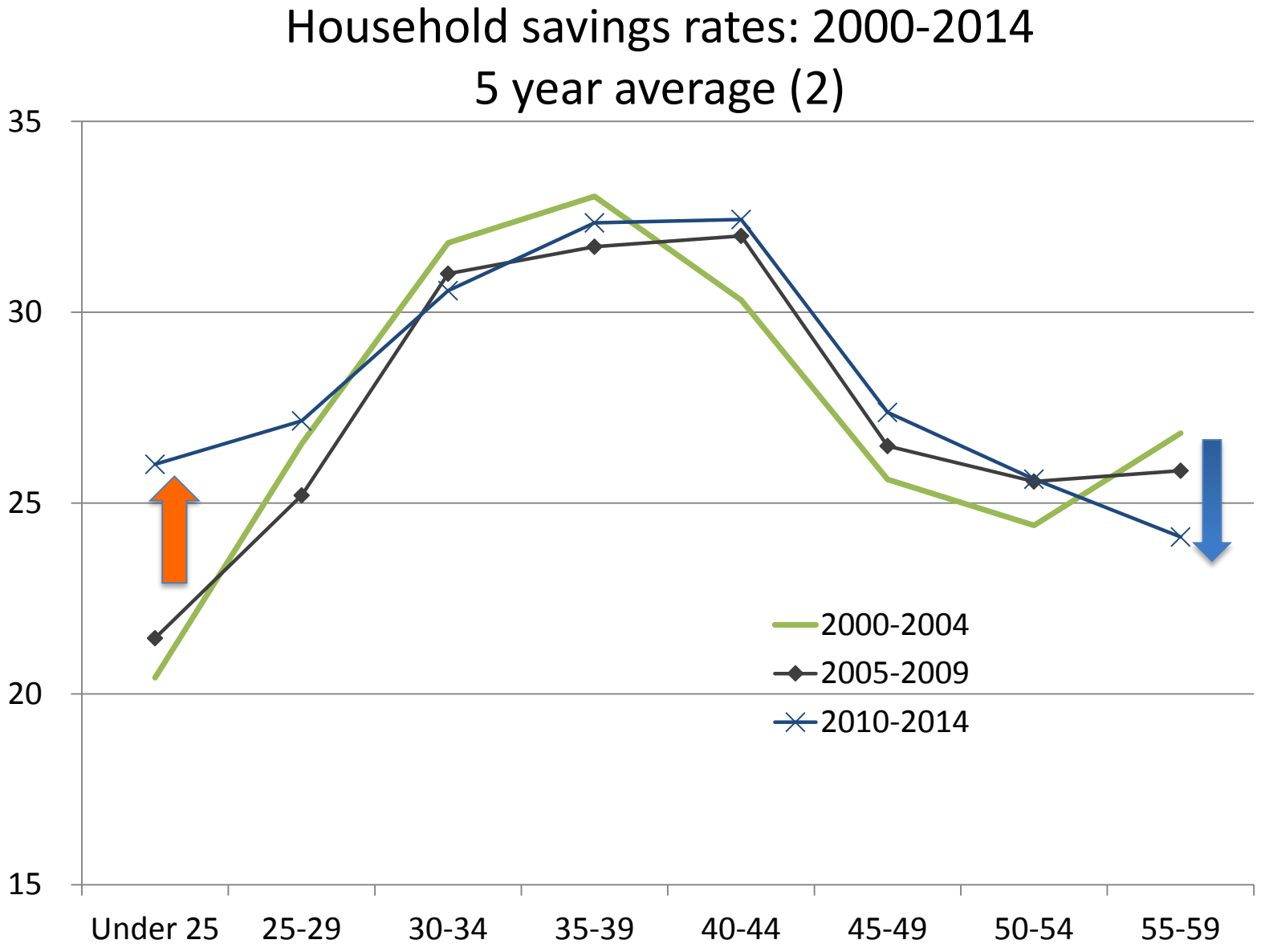


Age-group savings rates in FIES data



Age-group savings rates in FIES data

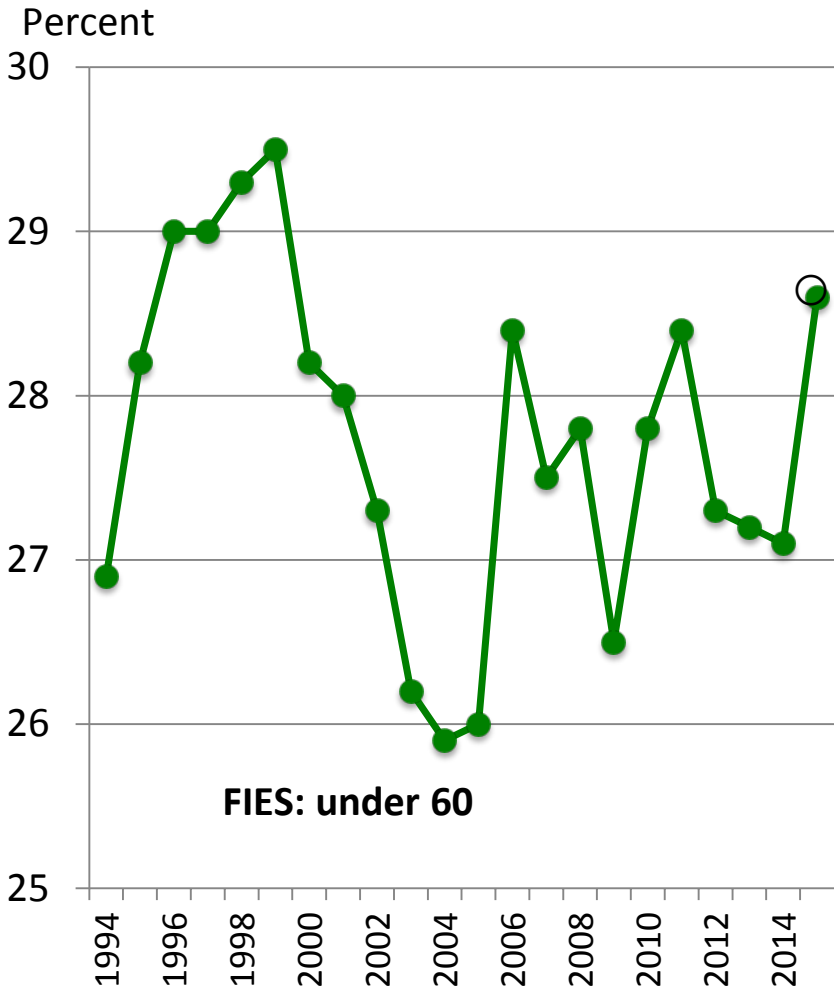


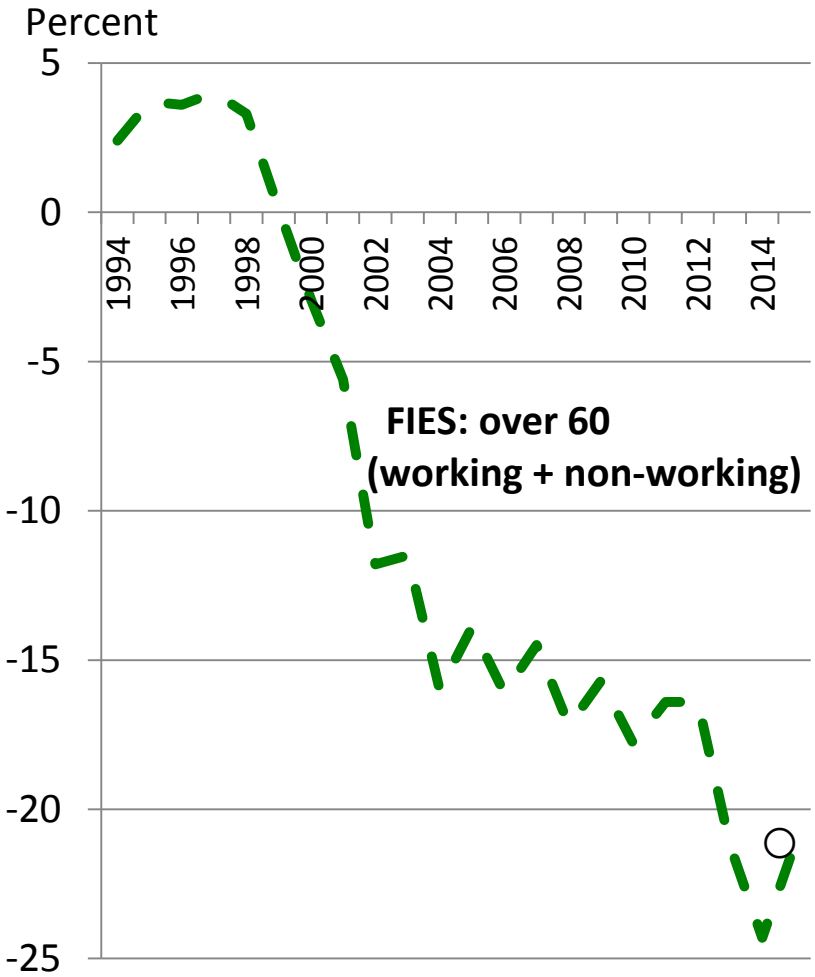
Age-group savings rates in FIES data: under age 60 vs. age 60 and over

- Both groups' savings significant declined from the end of the 1990s to 2004.
- From 2006 to 2015, the age-group savings rates of working age (under 60) rebounded significantly.
- The age-group savings rates of age 60 and over also stopped falling in 2006-2011. But, their savings rates declined again in 2012-2014 (slightly bouncing back in 2015).
  - The decreasing trend of savings rates probably reflects the increasing share of elderly aged 65 and over

FIES savings rate by age group

under age 60 vs. age 60 and over





Implications of micro evidence for aggregate household savings rate

- If the aging population had been the main force behind the household savings rate movement, the aggregate savings rate should decline more steadily and slowly.
- Instead, since the late 1990s, we observe large ups and downs and in the aggregate savings rate and in FIES's age-group savings rates.

Future movement of household savings

- It is unlikely that we will observe another sharp decline of the household savings rates as in the early 2000s in the near future.

- We expect that household savings will keep declining, but only slowly.

3. HOUSEHOLD PORTFOLIOS

Dataset: Nikkei Radar

- Household survey of those residing in the metropolitan area (within 40km-raduis from Tokyo Station).
- It contains information about household portfolio allocations, and on their characteristics such as age, income, and occupation.
- Annually repeated cross section data.
  - The number of observations is about 40,000 households (2500-3000 per year).
  - We use 2000-2014 surveys. For descriptive statistics, we use the 3-year moving average, 2012-2014.

Dataset: Nikkei Radar

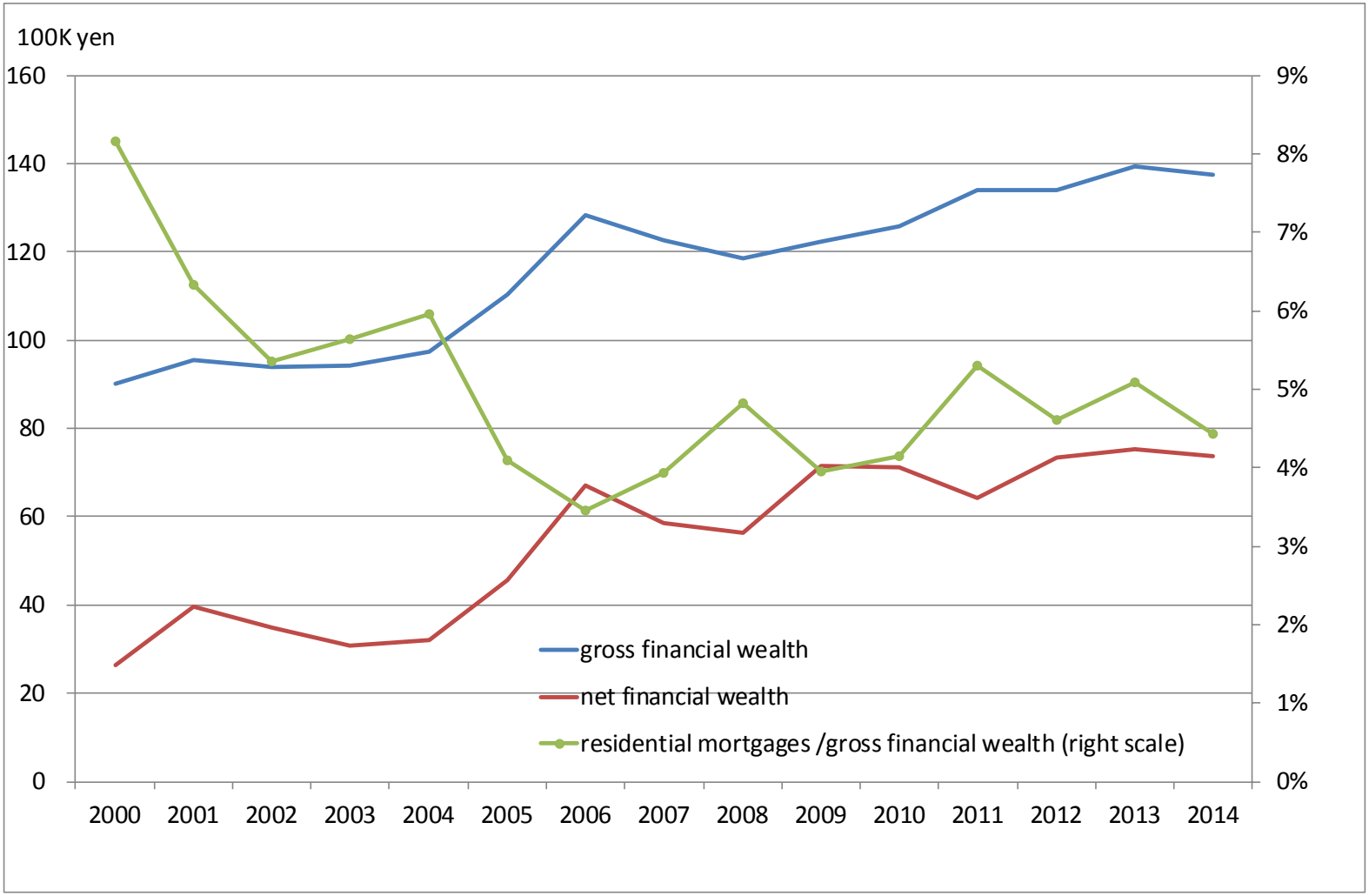
- Main variables we use:
  - Household gross financial wealth and its composition (market values for stocks and mutual funds, book values otherwise).
  - Age of head of household.
- Caveats
  - The average household is richer (in terms of income and wealth) than the national average
  - Some households choose not to answer the questions regarding the amount of borrowings including residential mortgages.
  - In addition, the fraction of households that have residential mortgages is smaller than the national average.

Japanese household wealth

- The average amount of gross financial wealth (GFW) and net financial wealth (NFW) increased steadily from 2000 to 2014
  - Average growth rate per annum of GFW: 3.1%
  - Average growth rate per annum of NFW: 7.6%
  - Deleveraging of Japanese household financial wealth is explained by the slowdown in residential mortgage loans.
- We obtain qualitatively similar results when we use aggregate "Flow of funds" data (GFW: 1.6%, NFW: 2.3-2.4%)

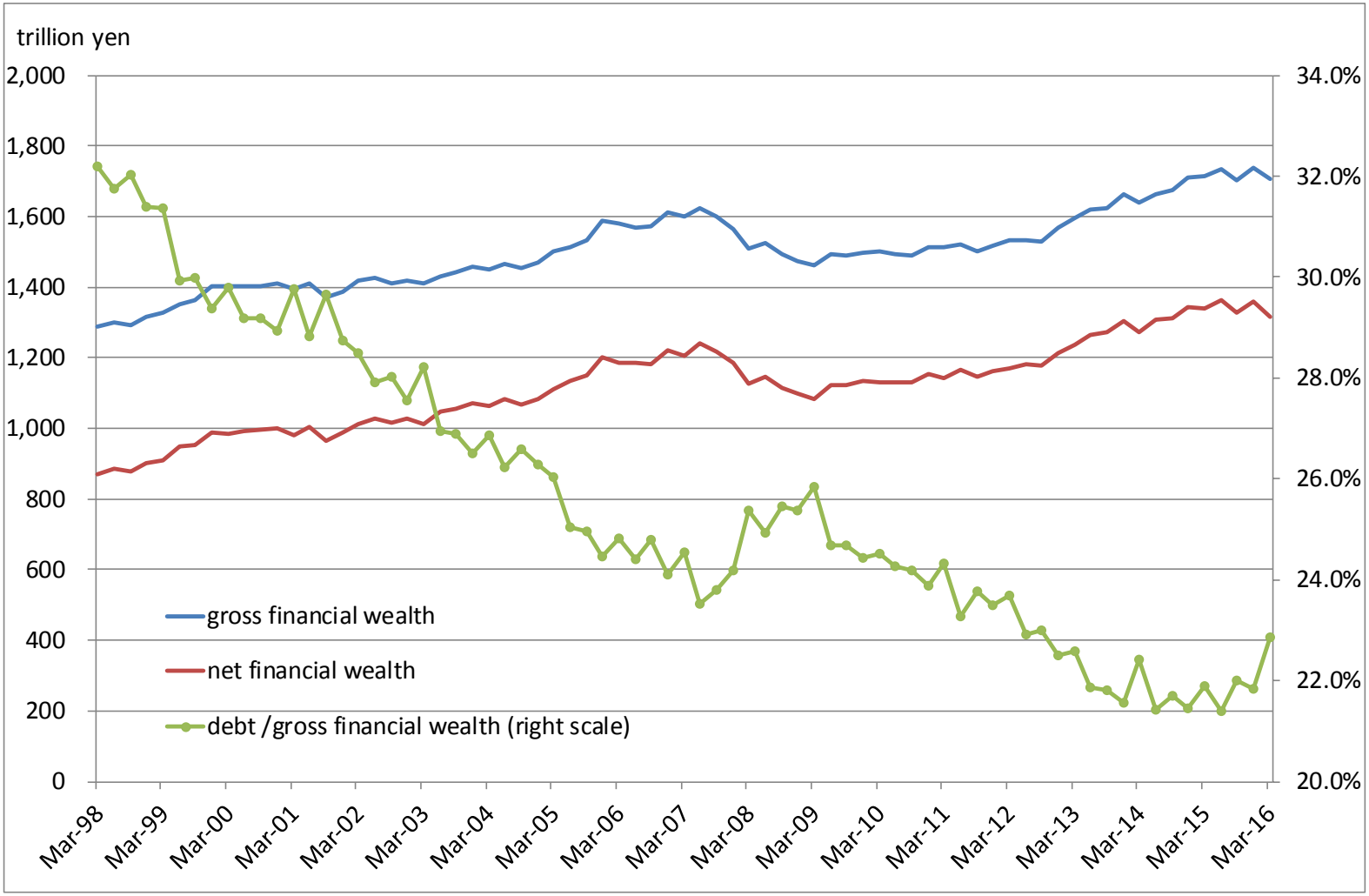
Japanese household financial wealth

Nikkei Radar data (annual, mean)



Japanese household financial wealth

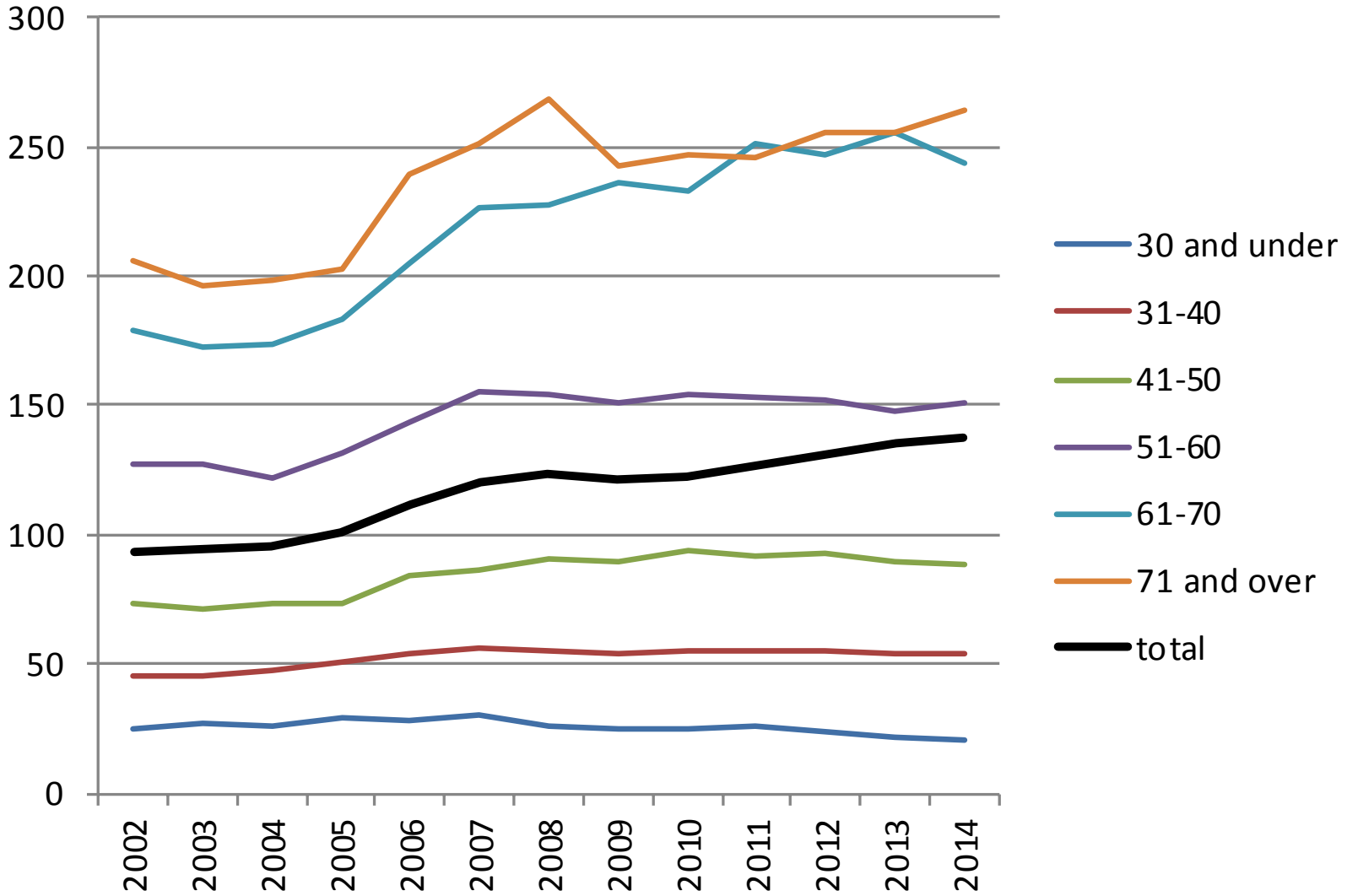
Flow of funds data (quarterly)



Japanese household wealth by age

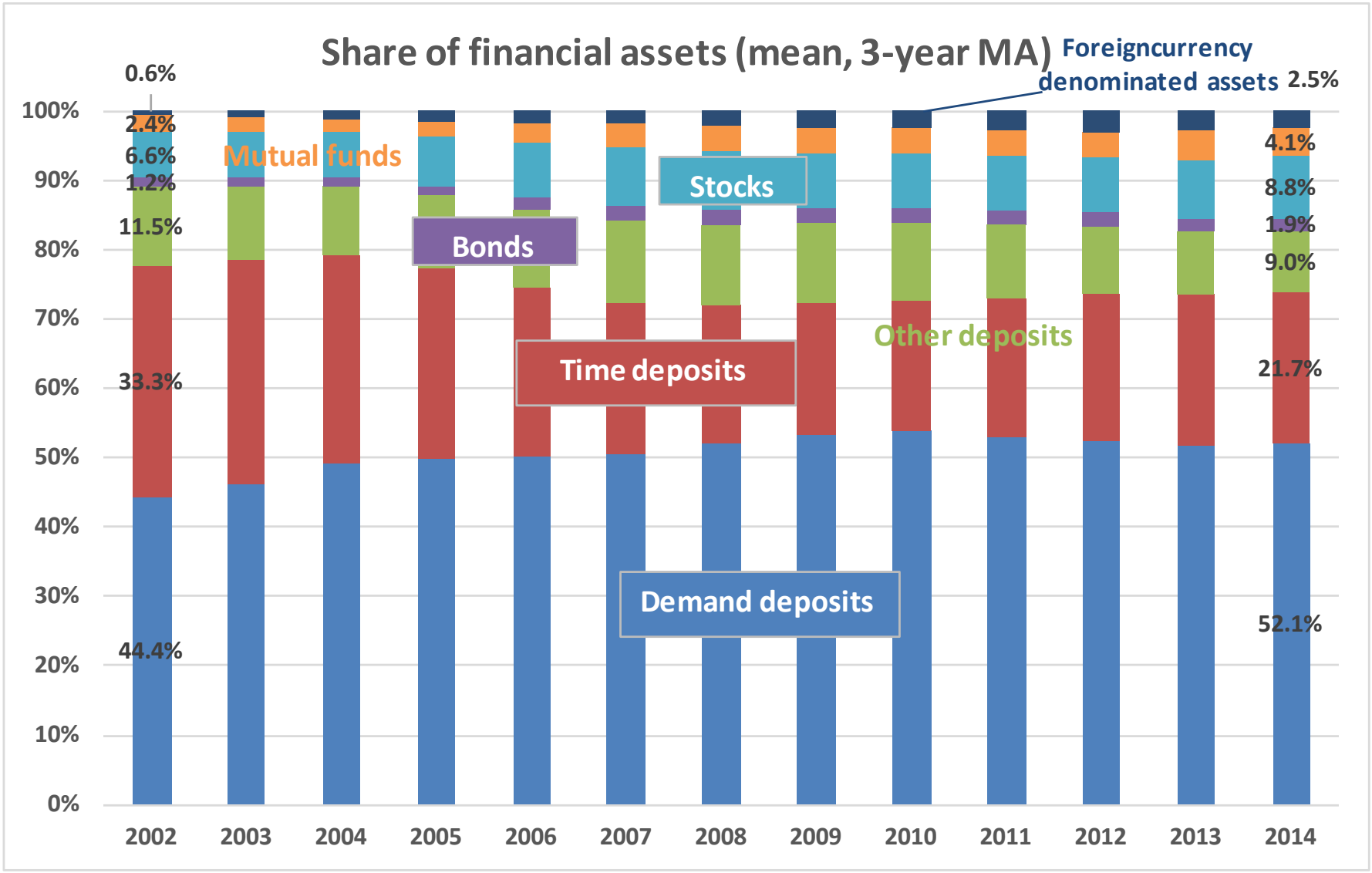
- The average growth rate per annum for 2002 to 2014:
  - Age 61-70: +2.6%
  - Age 71 and over: +2.1%
  - Age 30 and under: –1.6%,
  - Age 31-40: +1.4%
- Population aging (increasing share of wealthy elderly households) also contributed to steady increase in GFW.
  - The total growth rate (3.3%) is higher than the growth rates of any age cohort.

Gross financial assets (mean, 3-year MA)



Share of financial assets

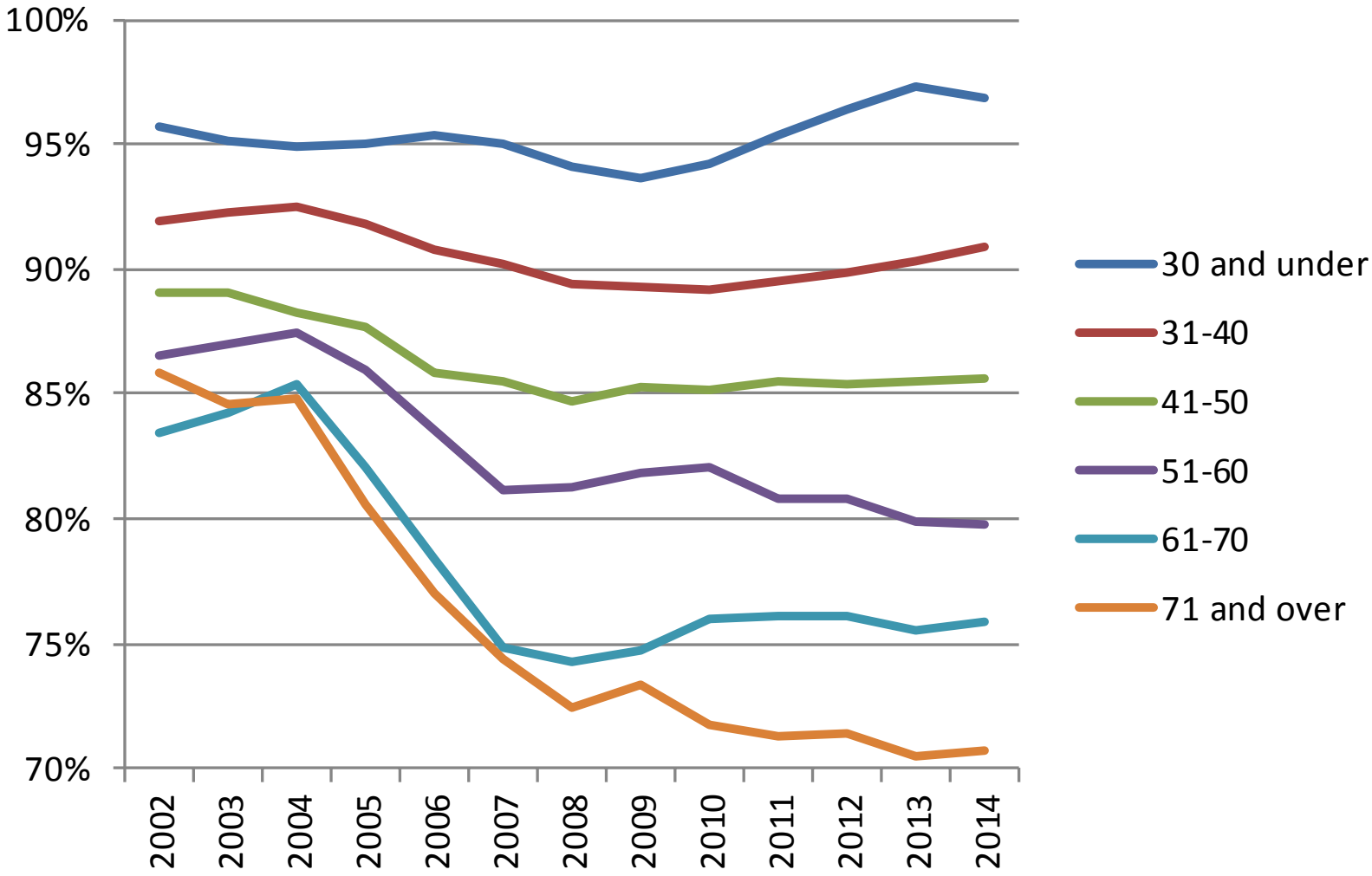
- During 2002 to 2014, the share of total deposits decreased.
  - Shares of time deposits and other deposits decreased.
  - Share of demand deposits increased.
- In contrast, the share of risky assets (stocks, mutual funds, foreign currency denominated assets) increased.
- The share of bonds increased from 1.2% in 2002 to 2.3% in 2008, then decreased to 1.9% in 2014.
  - Consistent with household JGB holdings data.


Share of financial assets (mean, 3-year MA)
Foreigncurrency denominated assets
Mutual funds
Stocks
Bonds
Time deposits
Other deposits
Demand deposits
0.6%
2.4%
6.6%
1.2%
11.5%
33.3%
44.4%
2.5%
4.1%
8.8%
1.9%
9.0%
21.7%
52.1%
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014

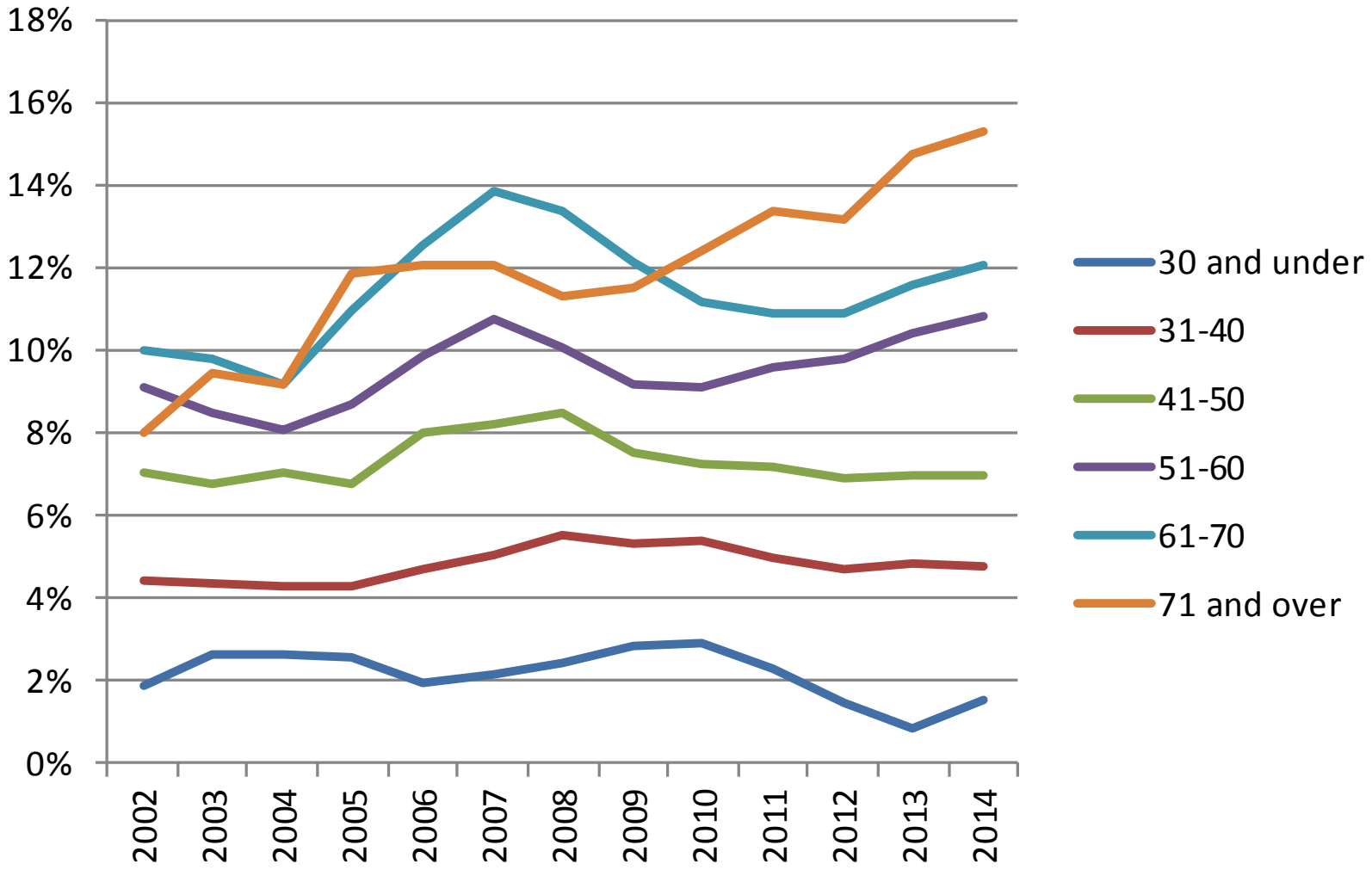
Share of financial assets by age group

- Changes in share of financial assets during 2002-2014 are driven by older households.
  - The shares of safe assets (deposits) and risky assets (stocks) are stable for householders of age "30 and under" and "31-40."
  - "61-70" and "71 and over" householders significantly decreased the share of deposits and increased the share of stocks.
  - Elderly householders also increased the share of bonds up to 2008.

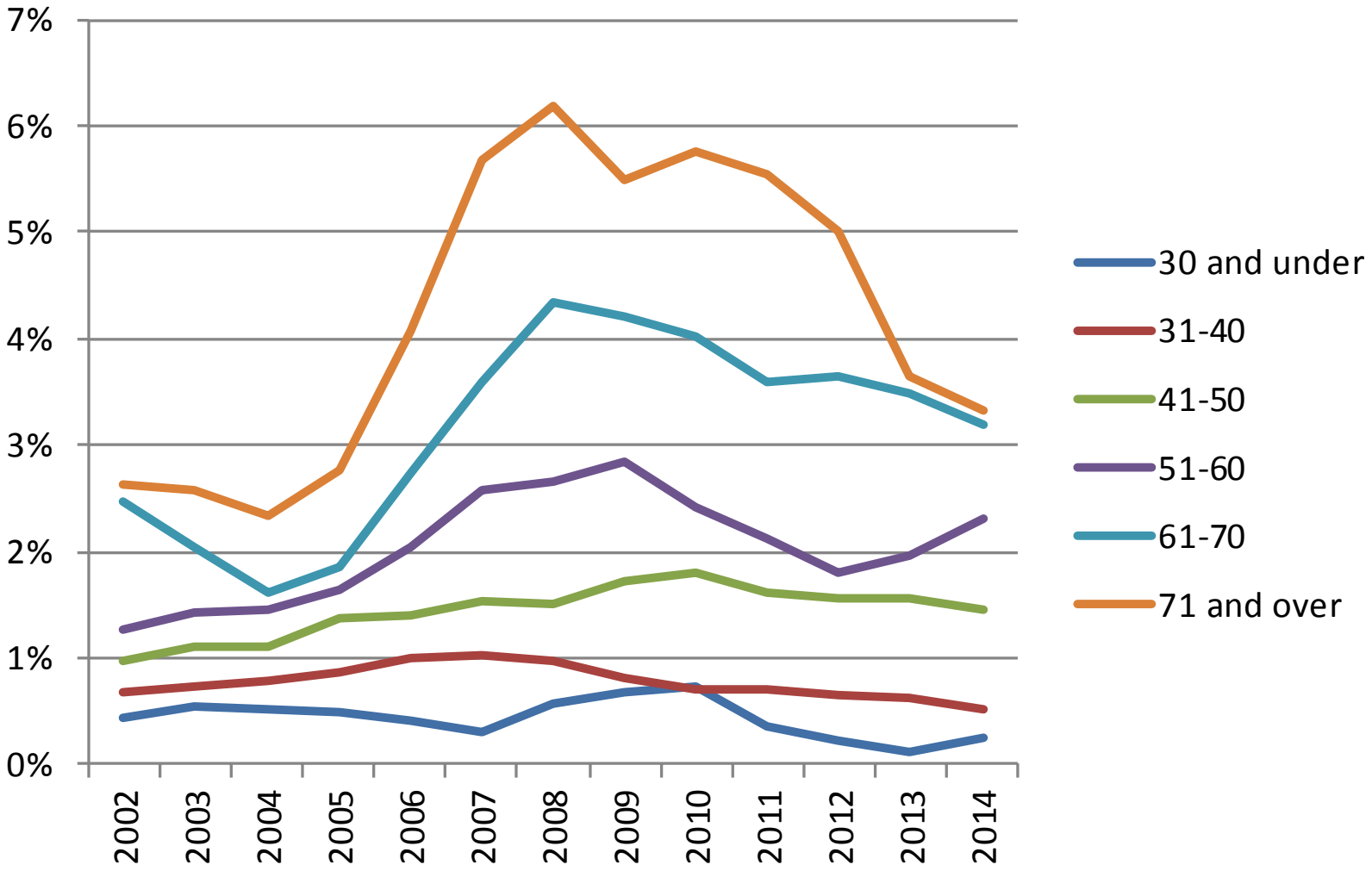
Share of deposits (mean, 3-year MA)



Share of stocks (mean, 3-year MA)



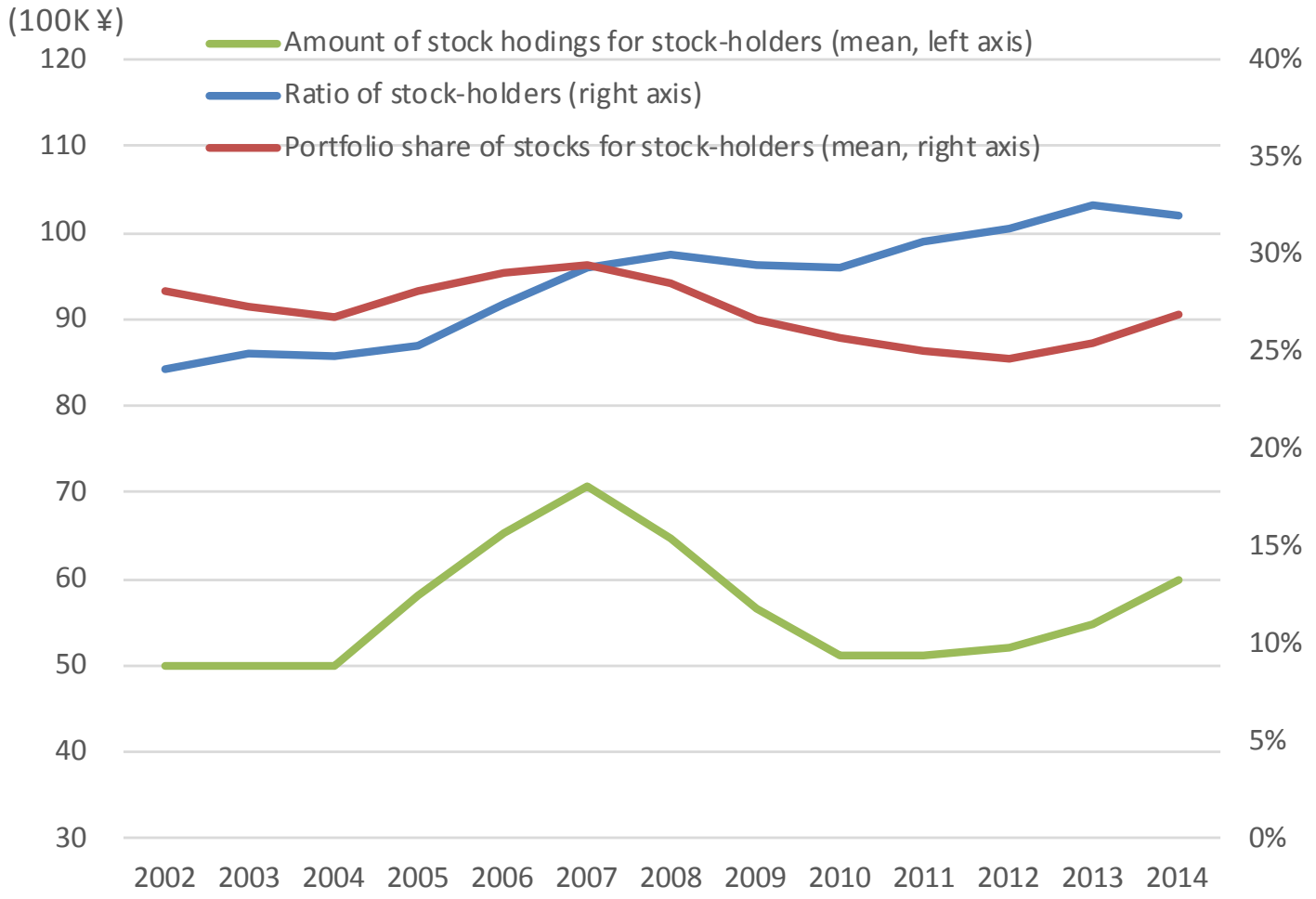
Share of bonds (mean, 3-year MA)



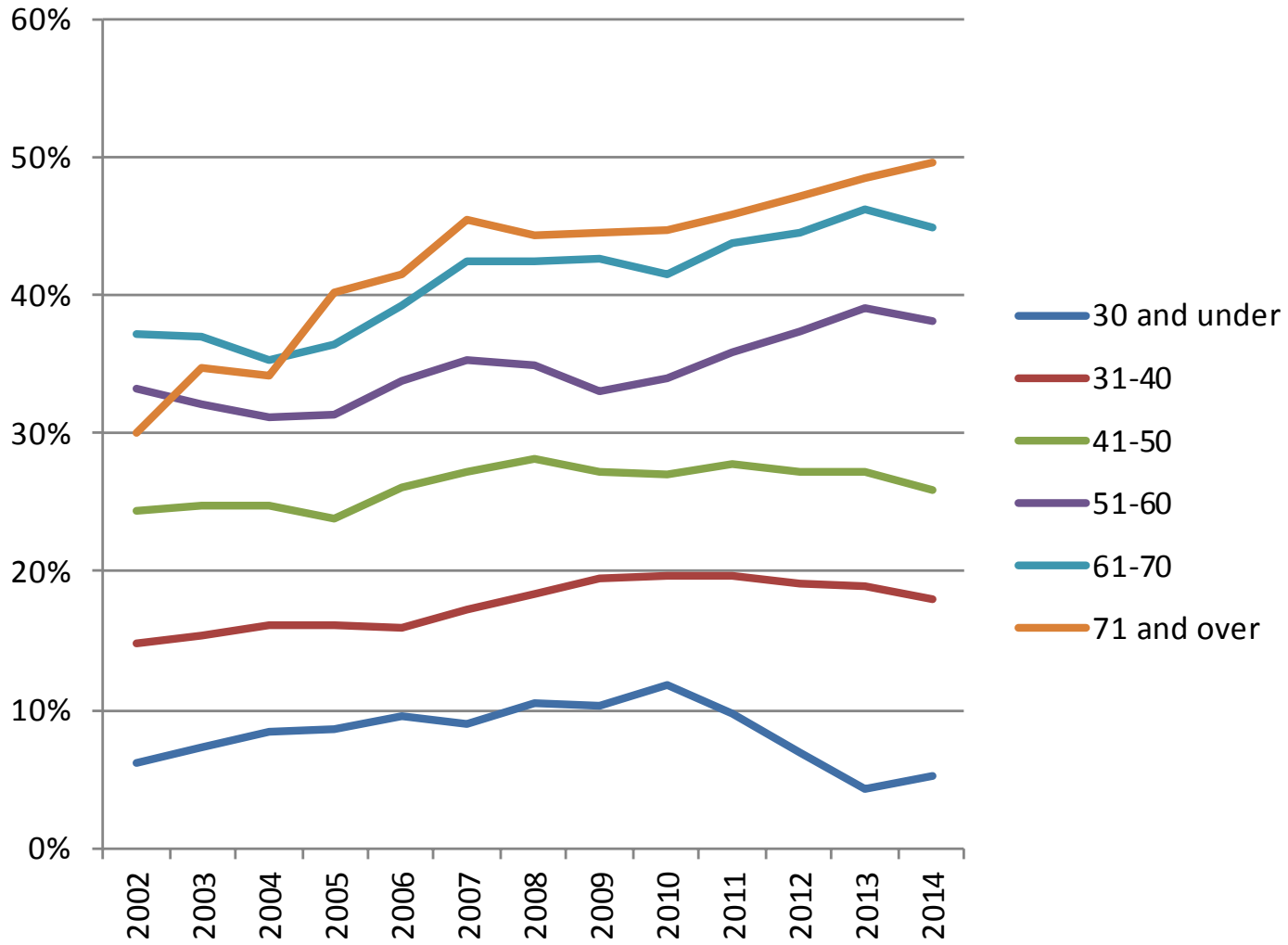
Extensive margin and intensive margin: Stocks

- The increasing share of stocks is mostly attributable to the increase in its "extensive margin" (ratio of stock-holders).
  - The portfolio share of stocks for stock-holders does not exhibit an upward trend; it mostly reflects changes in stock prices.
- Increase in the extensive margin is larger for older households (Age 51 and above).
  - Extensive margins of younger households are stable ("31-40," "41-50") or decreasing ("30 and under") after 2008-09.

Extensive margin and intensive margin: Stocks (3-year MA)



Extensive margin by age groups: Stocks (3-year MA)



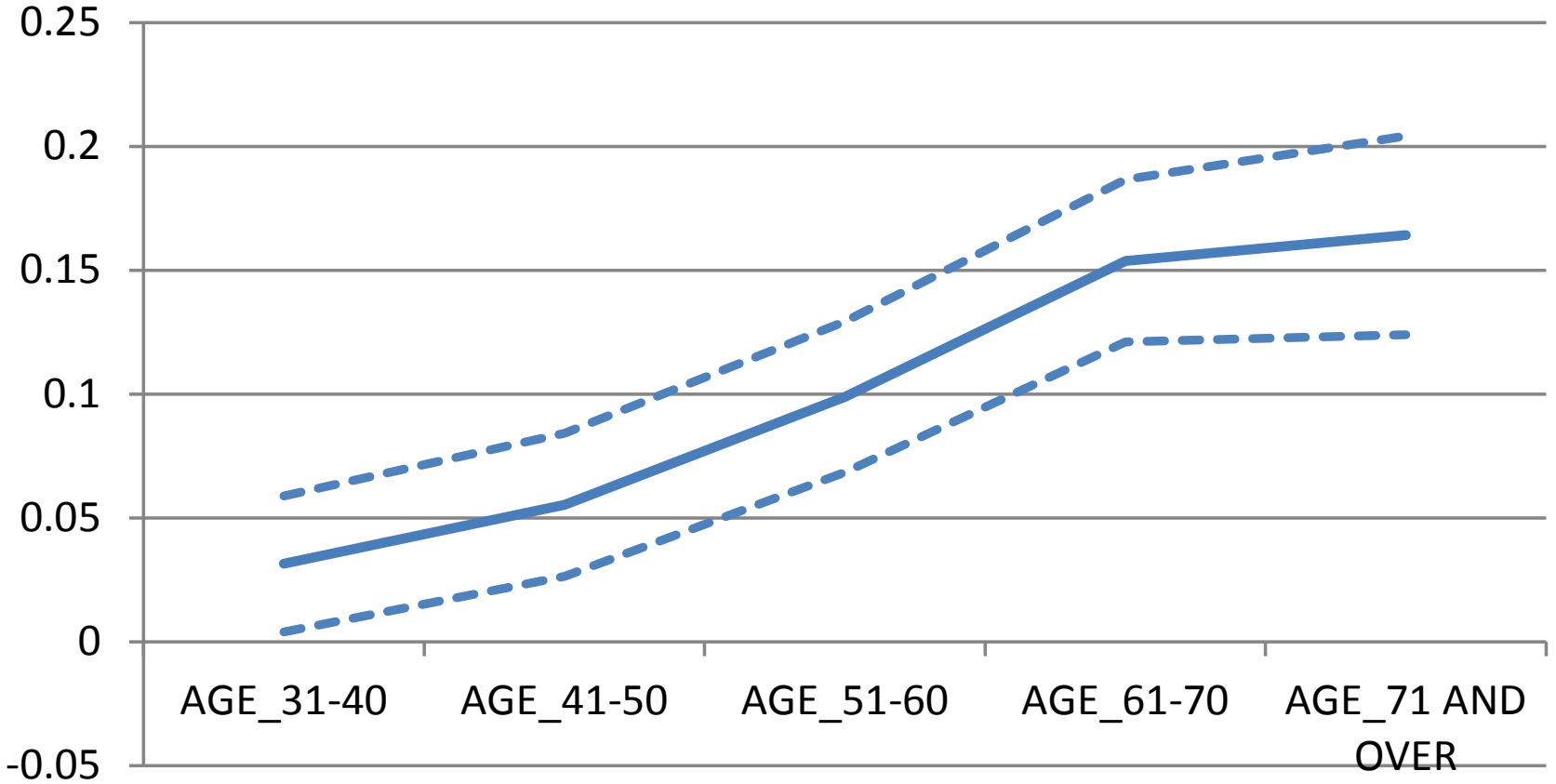
Econometric analyses of asset holdings and asset shares

- We conducted regression analyses to confirm the effect of household age on stock and bond holdings (extensive margin), and share of stock and bond holdings to gross financial assets (intensive margin).
  - Main independent variables: Householder age (Default: AGE_30 AND UNDER).
  - Other covariates: RESIDENTIAL LAND/GROSS TOTAL ASSET, ln(INCOME), ln(GROSS TOTAL ASSET), FAMILYSIZE, and YEAR DUMMIES.
  - Detailed results are reported in the tables in the appendix.

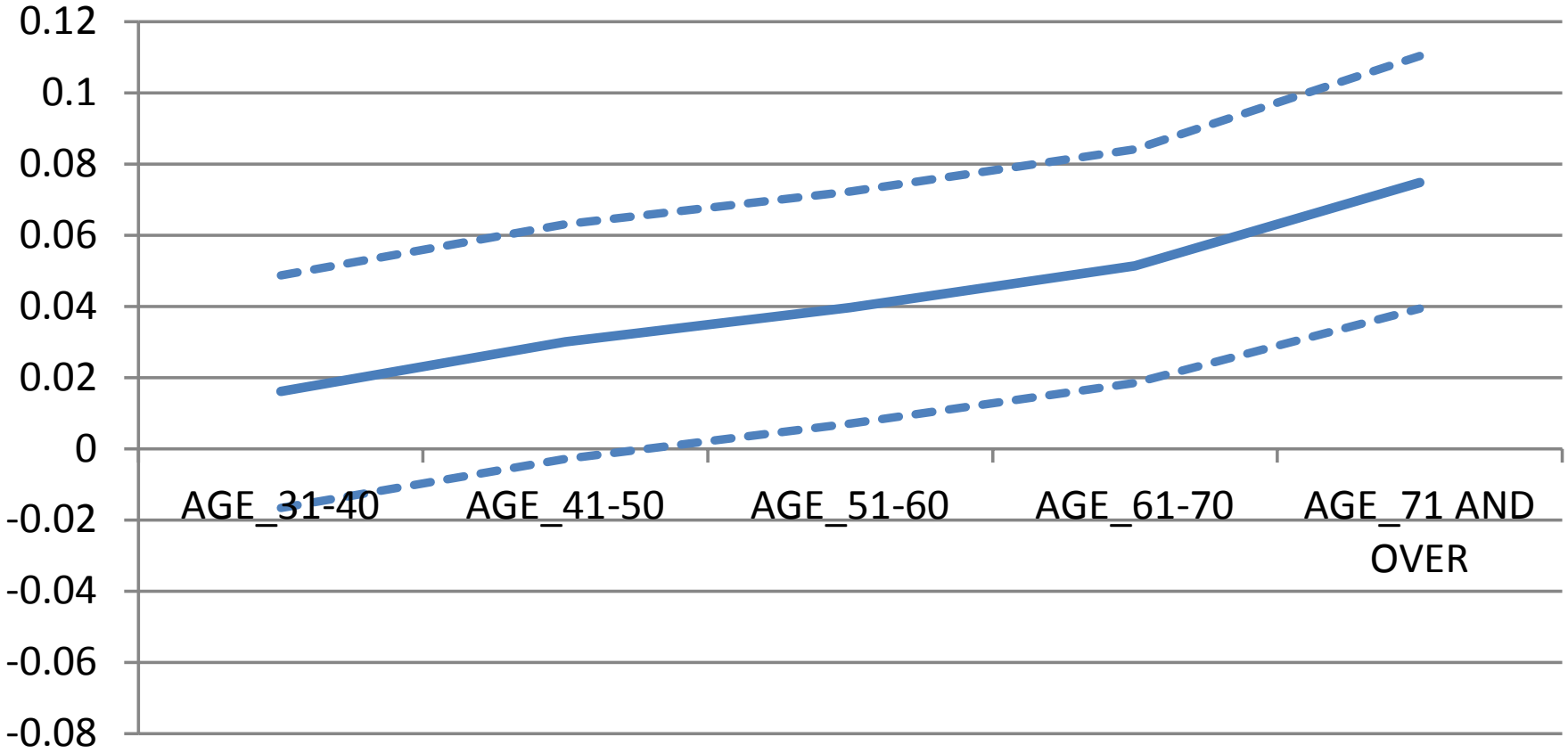
Effect of age on stocks and bonds

- Significant effects of age on stock
  - Extensive margin: Relative to households of "30 and under," the probability of holding stocks is 10-16 percentage points higher for households over age 51
  - Intensive margin: Relative to households of "30 and under," the share of stocks is 4-8 percentage points higher for households over age 51
- Effects of age on bonds are weaker
  - Extensive margin: The probability of holding bonds is 2-5 percentage points higher for households over 51
  - Intensive margin: No significant effect

Effect of age on stock holdings (extensive margin)



Effect of age on stock share for stockholders (intensive margin)



The stock share of elderly household portfolios is higher than the young

- In the U.S. and Western Europe, the stock share in the household portfolio over the life-cycle has a hump-shaped pattern.
- Owner-occupied housing can explain such a hump-shaped pattern.
  - Flavin and Yamashita (2002); Yamashita (2003), Cocco (2005) Yao and Zhang (2005); Chetty et al. (2016).
- Japanese household stock share does not decrease even for over age 60.

But why has the elderly stock share not decreased in Japan?

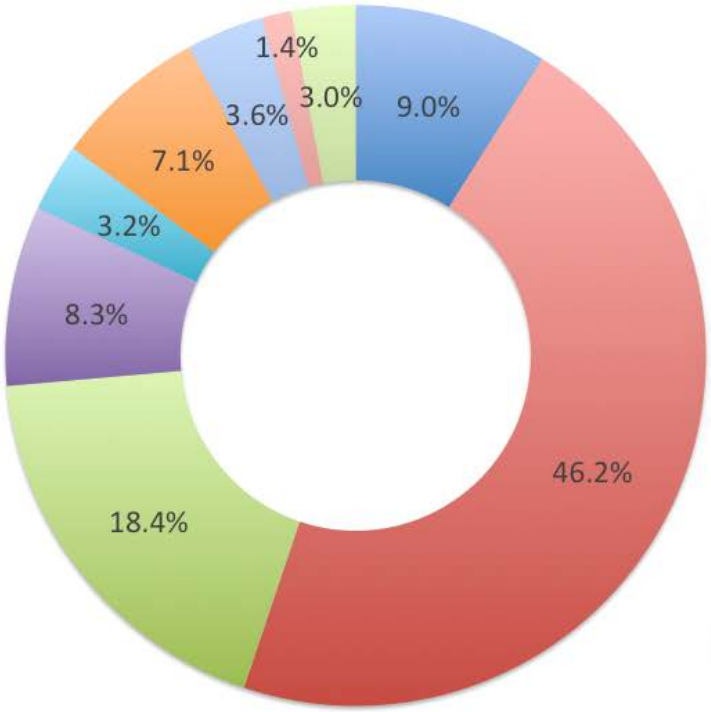
- Possible explanations

1. The age-income profile is steeper in Japan.
2. The share of owner-occupied housing in Japanese household wealth is much higher.
3. Other explanations:
   - Elderly households are more likely to be financially literate (Kitamura and Uchino 2011).
   - Peer effect in stock investments among elderly households?

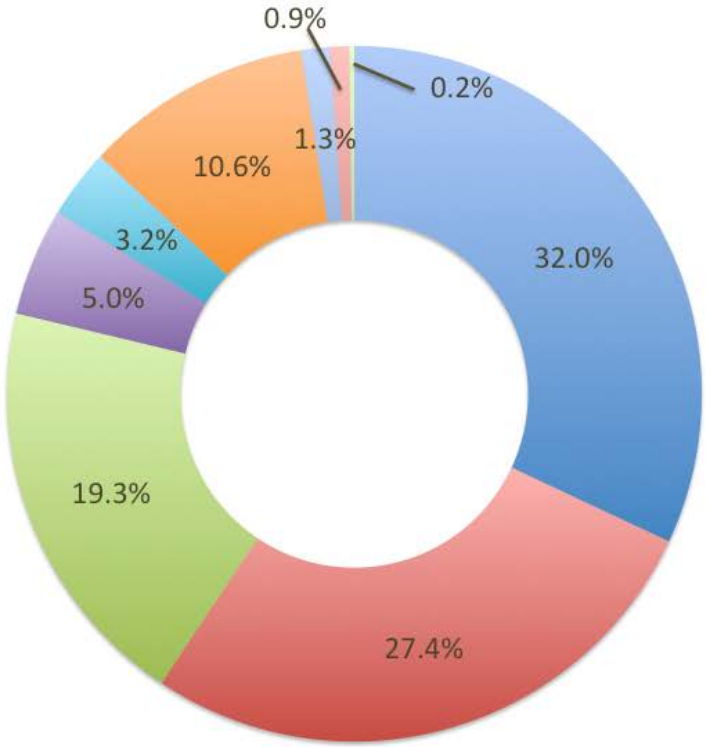
4. JGB HOLDINGS

JGB holdings in 2010 and 2015

FY 2010
(March 2011)



FY 2015
(March 2016)



- Bank of Japan
- Financial institutions
- Insuarance companies
- Public pensions
- Private pensions
- Foregin
- Household
- Others
- General government

Average maturity and changes of JGB holdings by investor type

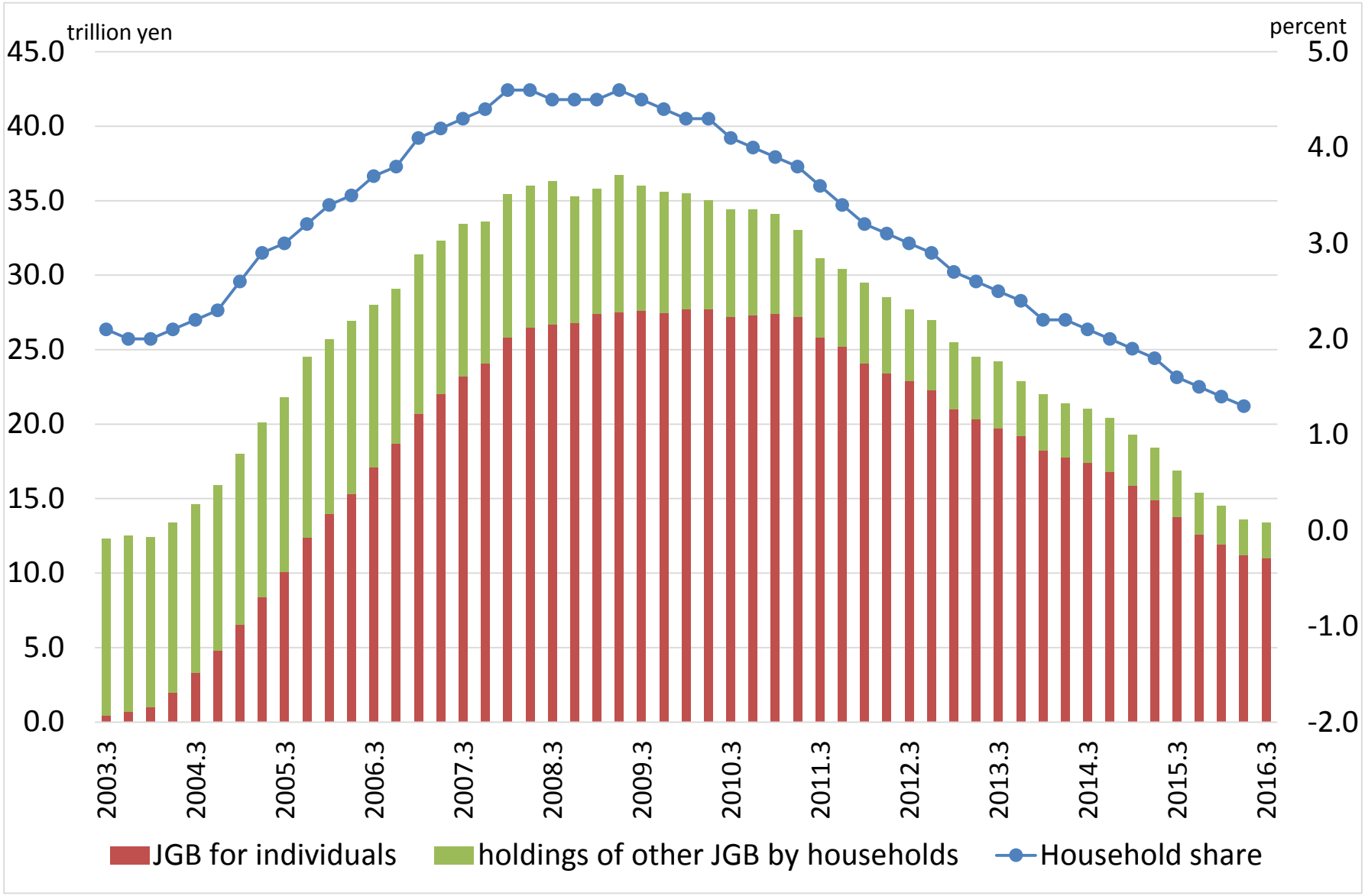
Average maturity of JGB	
FY2005	5y 4m
FY2010	6y 8m
FY2015	8y 5m

	2005-2010	2010-2015
Bank of Japan	(15.7%)	322.4%
Financial institutions	30.0%	(30.0%)
Insurance companies	35.8%	24.0%
Public pensions	17.9%	(28.7%)
Private pensions	15.6%	20.7%
Foreign	83.9%	77.5%
Household	11.3%	(56.3%)
Others	100.4%	(21.7%)
General Government	(70.3%)	(90.8%)
TOTAL	14.7%	18.2%

JGB holdings by households

- Household direct holdings of JGB peaked out around 2008-09.
- However, direct holdings have been very limited compared with the total amount of outstanding JGB. So household portfolio adjustment will not have a significant effect on the JGB market in any way.

JGB holdings by Japanese households



5. CONCLUSIONS

Summary (1)

- Aging and savings
  - Household savings declined sharply in the early 2000s. However, this decline probably reflects the sudden labor income decline in this period.
  - We will not see such a dramatic decline in the near future, unless there is another large income shock. Household savings will keep declining, but only slowly.
  - Corporate savings have been very high since the early 2000s. As a result, we see only a mild decline in Japan's private sector savings as a fraction of GDP in the last twenty years of about 2 percentage points.

Summary (2)

- Aging and household portfolios
  - The stock share in household portfolios is mildly increasing.
  - The bond share had increased until around 2008, and has since declined in recent years.
  - These changes in asset shares are mostly induced by the behaviors of elderly households in their 50s and over 60.
- Because the portfolio choice by elderly Japanese is different from that of the U.S., the aging of the population has not induced exits from the stock market so far. In fact, aging might have been inducing risk-taking by Japanese households in the last 15 years.

What we do not know

- Japan's corporate savings have been extremely high, even compared with the U.S. after the Great Recession. Why is this and what should we do about it?
- More comprehensive analyses of older household savings and portfolio behaviors are necessary.