

# Societal Aging and Policy Responses in Japan

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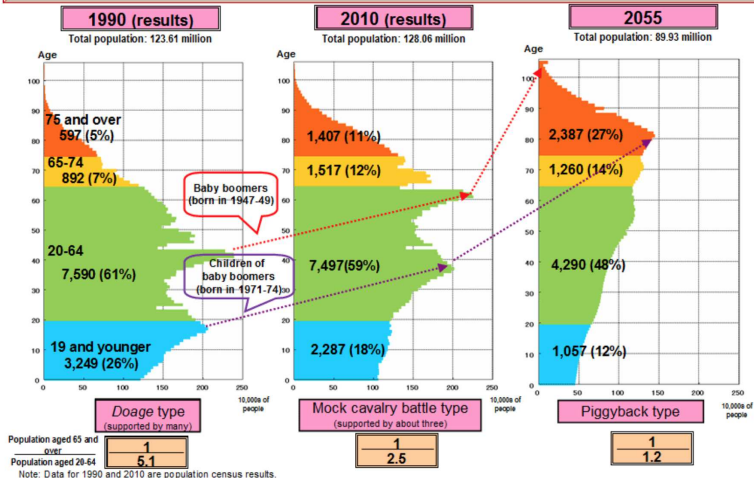
# Basic Issue: How to deal with the societal aging in an economy with a lot of public debt

- Two significant challenges faced by Japan
  - High (net) debt to output ratio (about 150%).
  - Projected increase in government expenditures due to aging population.
    - Spending to output projected to rise by 7% of GDP due to increases in pension and health expenditures.
- Need to explore size and consequences of fiscal responses to this problem.

# Societal Aging: How large is this problem?

## Population Pyramids from the Ministry of Health, Labor and Welfare

Change in the population pyramid (1990, 2010, 2055) - 2006 medium variant projection



# What should Japan do?

Demographic Changes and Macroeconomic Performance: Japanese Experiences

by Masaaki Shirakawa, 2012 May BOJ-IMES Conference

"The current difficulties come not from the continued population aging itself, but from the delayed response to it. On that ground, I emphasize that, if society correctly recognizes the challenges coming from demographic changes, and if society judges that changes in the systems are needed, we should find remedies in our hands. I offer a couple of options for possible changes if Japanese people are determined to take action."

- 1 Increase the working age population (labor force): fertility, female labor force participation, older workers, foreign workers
- 2 Re-orient resources (capital and labor) toward the goods and services consumed by the elderly
- 3 Re-orient resources (business) to raise productivity with the help of globalization. I interpret this as a re-haul of workplace practices and microeconomic reforms?

# Achieving Fiscal Balance in Japan

İmrohoroğlu, Kitao, and Yamada (2013)

- Large scale overlapping generations model
- Individuals live from 1 to 111 years old
- Individuals differ in terms age, gender, job type, number of children, earnings, pensions
- Jobs: Regular, contingent, self-employed, unemployed
- Individuals' earnings (for both male and females and for each job type) are estimated from Japanese data
- Individuals' age-consumption profile also estimated from micro data
- Follow Japanese pension rules and tax policy closely
- Assume that markets are complete

# Achieving Fiscal Balance in Japan

İmrohoroğlu, Kitao, and Yamada (2013)

- Consumptions are then given by Permanent Income Hypothesis: at each age, consumption is a fraction of present value of discounted disposable income
- Asset holdings are computed as a residual from the individual's flow budget constraint
- Aggregation done using the number of individuals in category
- Government budget and debt implications are calculated from 2010 to 2100
- Per capita GDP grows slower than GDP per working age population

# Achieving Fiscal Balance in Japan

## Pension Reform

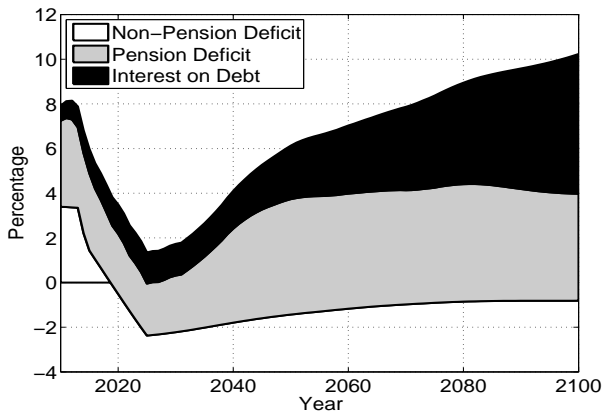
Table : Retirement at Age 70 and 10% Benefit Cut

	$\frac{(B_t - F_t)}{Y_t}$	$\frac{(G_t + TR_t - T_t)}{Y_t}$	$\frac{(P_t - PR_t)}{Y_t}$	$\frac{(r_{b,t}B_t - r_{f,t}F_t)}{Y_t}$
2010	1.042	0.034	0.024	0.007
2020	1.487	0.014	0.014	0.011
2030	1.744	0.014	0.005	0.012
2040	2.022	0.017	0.005	0.013
2050	2.470	0.021	0.018	0.015
2060	3.013	0.024	0.019	0.018



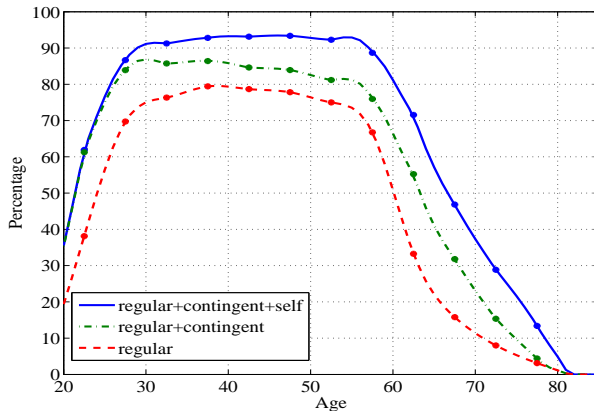
# Achieving Fiscal Balance in Japan

## Sources of New Borrowing with a 20% Consumption Tax



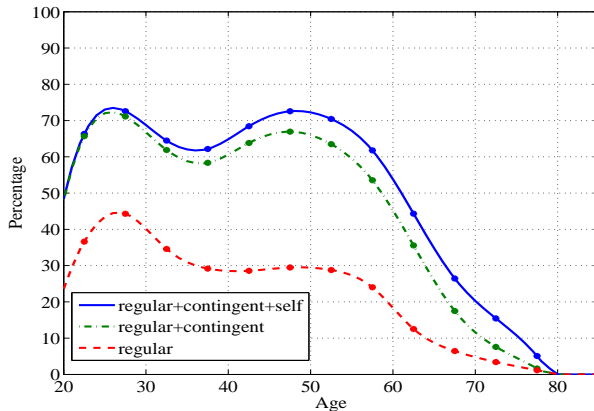
# Achieving Fiscal Balance in Japan

## Male Labor Force Participation in Japan (Labor Force Survey)



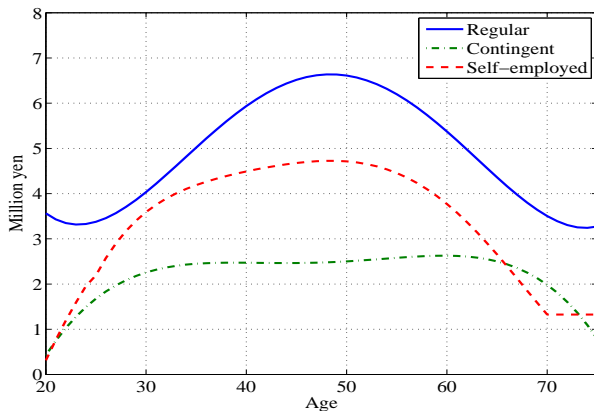
# Achieving Fiscal Balance in Japan

## Female Labor Force Participation in Japan (Labor Force Survey)



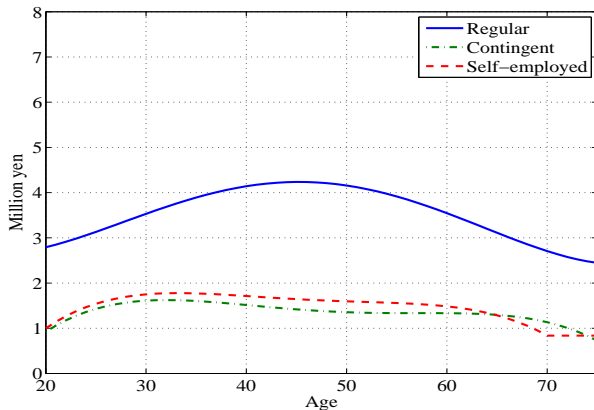
# Achieving Fiscal Balance in Japan

## Male Earnings in Japan (BSWS)



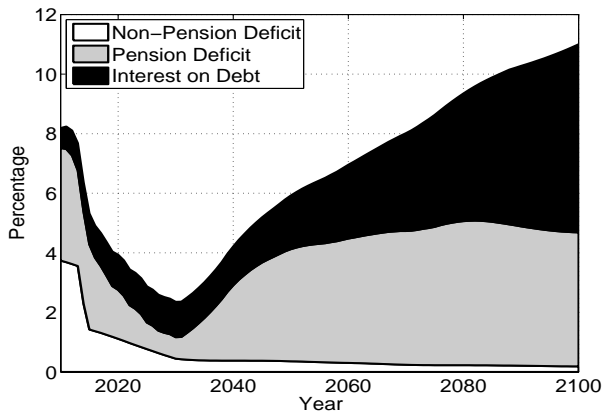
# Achieving Fiscal Balance in Japan

## Female Earnings in Japan (BSWS)



# Achieving Fiscal Balance in Japan

Sources of New Borrowing with Higher FLFP



# Achieving Fiscal Balance in Japan

İmrohoroğlu, Kitao, and Yamada (2013)

- No single policy or economic outcome can restore fiscal balance in Japan.
- Among the alternative scenarios employed:
  - Pension reform (retirement age to 70 and benefits cut by 10% reduces the pension deficit significantly)
  - An increase in the consumption tax from the scheduled 10% to 20% turns the non-pension deficit into a surplus immediately and for several decades
  - An increase in the female labor force participation (both the participation rates and employment types of females similar to those of males) has a large impact
  - Only a combination of these and other outcomes may accomplish the task of achieving fiscal balance in Japan

# Immigration

- An overlapping generations model that measures the tax revenue implications of a guest worker program
- Use (scarce) data on immigrants in Japan to calibrate
- Assume an age and ability distribution of guest workers
- Assume that there is annual inflow of  $X$  number of guest workers of a given age and ability distribution who work for  $Y$  number of years
- Calculate the fiscal impact, with varying values of  $X$  and  $Y$



# Female Labor Force Participation

- Develop a general equilibrium model with age, gender, job type as key state variables including time use in market activities and home production by males and females
- Use micro data in Japan to calibrate the model to produce observed FLFP and other macro indicators
- Conduct experiments on the extent and size of government subsidies that reduce the cost of FLFP in many dimensions (child care, schooling, social norms, etc) like in France
- Calculate the effects of the increased FLFP on macro indicators and on fiscal issues

# Abenomics: Focus on Third Arrow & Fourth Arrow

## The Japan Times Explains



7°C P/SUNNY  
TOKYO (3 p.m.)

MARKETS 118.48 ¥/\$ (3 p.m.)

The Japan Times

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