The Global Debt Crisis: Will Japan Be Next?

Presentation by

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Based on my paper with Takatoshi Ito

Hoshi and Ito (2012). "Defying Gravity: How Long Will Japanese Government Bond Prices Remain High?"

Defying gravity in Tokyo

Outline of the paper

1. Recent empirical studies (Japanese situation is not sustainable)
2. Why no crisis yet?
3. Potential triggers of the crisis
4. Importance of how to finance the reconstruction expenditure (after the earthquake/tsunami)
5. How the crisis will look like?
6. What can we do to manage the cost of the crisis
7. International spillovers and roles of IMF

Size of Japanese Debt Compared to Other countries: Central Government Debt at the end of 2010 (US$ Billion)

|	
Greece	455
Ireland	125
Portugal	203
Spain	734
France	1,755
Germany	1,483
UK	2,068
Italy	2,256
USA	9,035
Japan (2009)	9,465

Conclusion—in advance

- Conditions that have supported the high debt /GDP ratio
    1. Large domestic savings with home bias of Japanese investors
    2. Stagnating economy the depresses the interest rates
    3. Expectations of future fiscal consolidation
- Any substantial change in these can lead to a debt crisis
- How to finance the reconstruction after the earthquake/tsunami disaster can be critical
- When the crisis happens, the financial institutions sustain losses. There may be negative spillovers for trading partners
- To avoid the crisis, a credible commitment to fiscal consolidation is necessary. The current tax reform is necessary but not sufficient
- IMF could help by issuing a strong early warning.

Facts

- Gross Debt/GDP ratio, about 200%, the worst among the OECD
- Net Debt/GDP ratio, about 120%, the worst among the OECD
- Fiscal deficit is about 7% of GDP in the last three years
- New bond issues exceeds the tax revenues in the last two years
- Yet, the JGB yield is low (price is high)
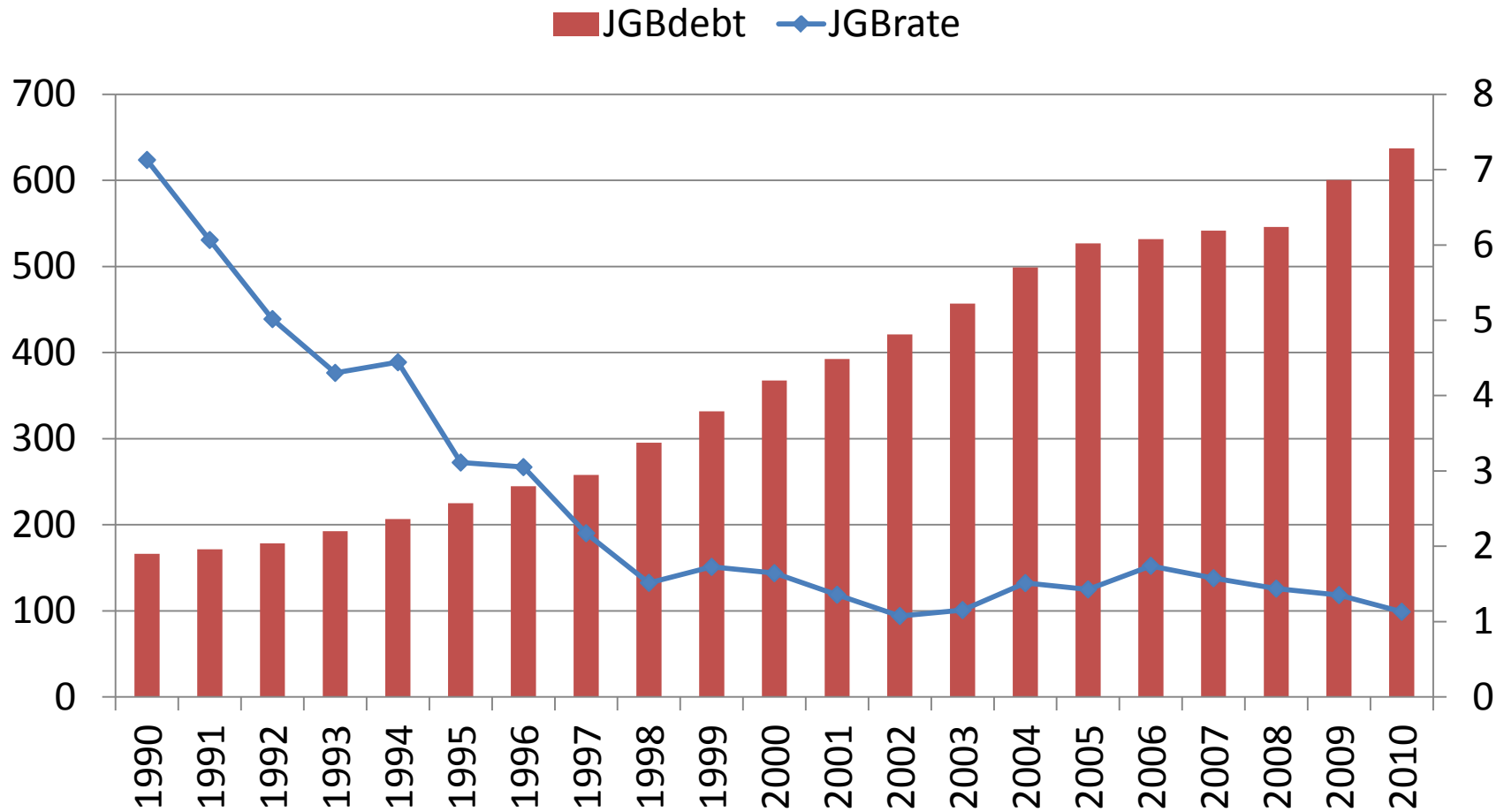
Fig 1. Gross Debt-GDP ratio

Gross Government Debt-GDP ratio
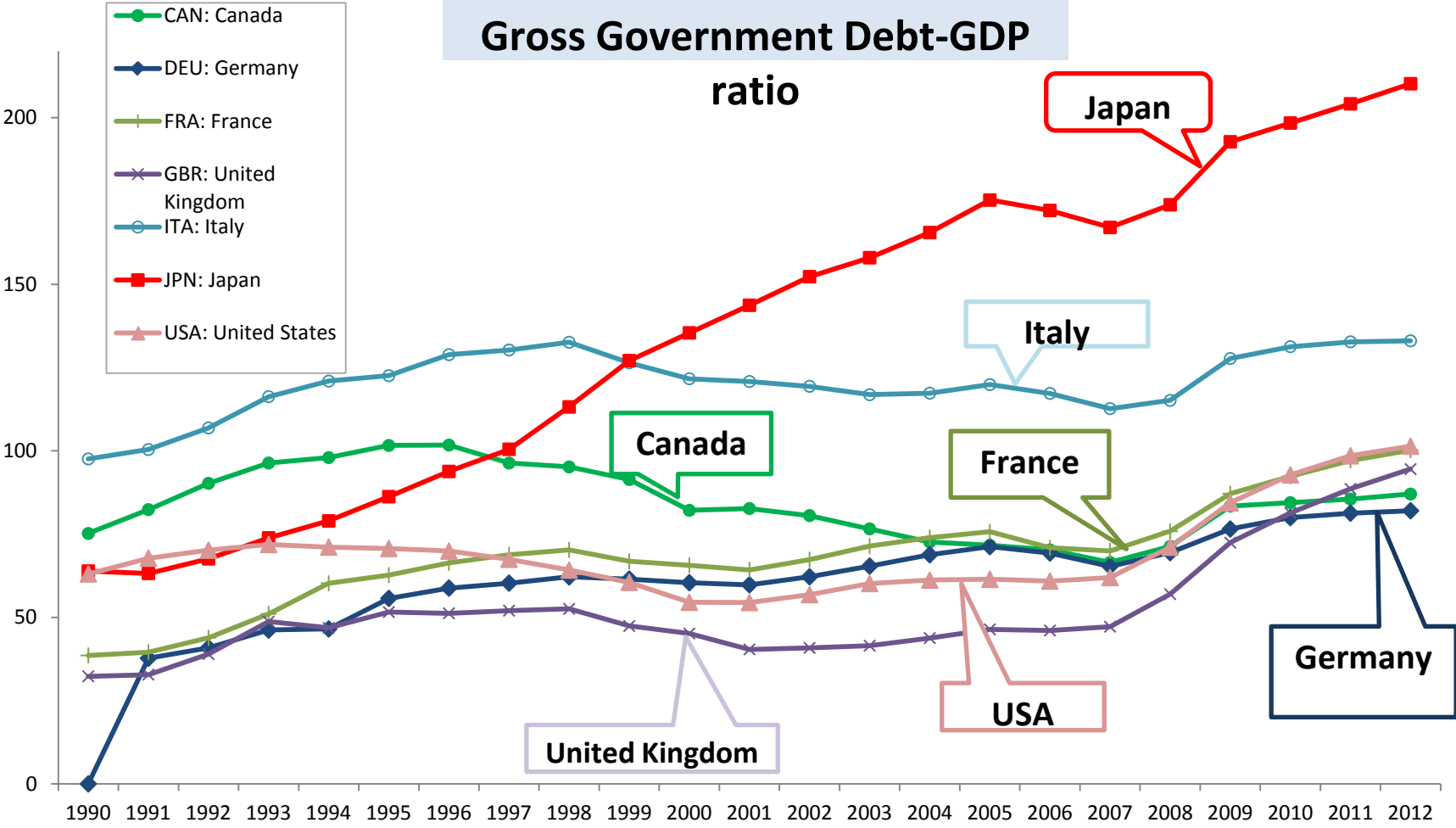
Fig. 2. Net Debt-GDP ratio
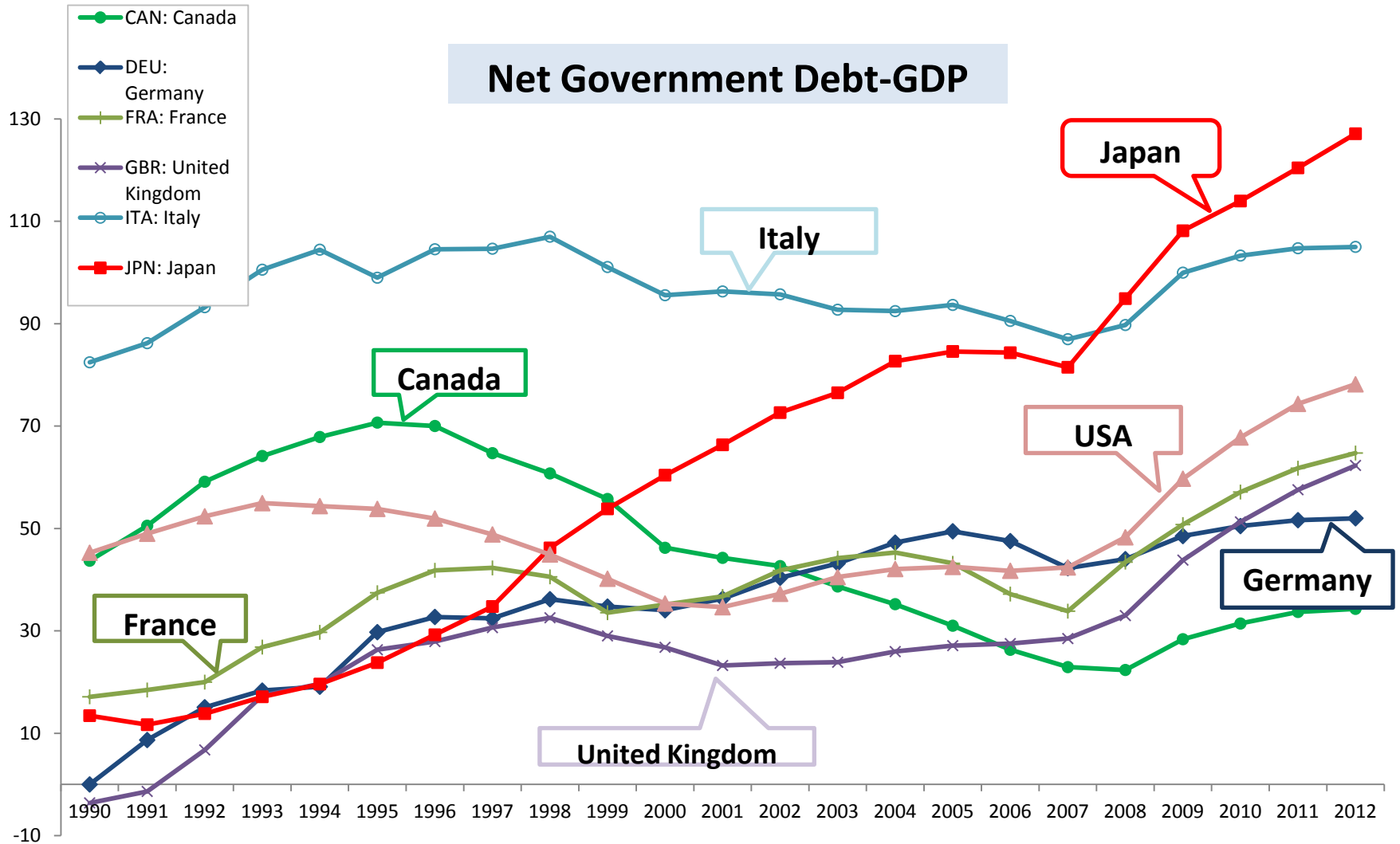
Figure 3. JGB stock and yield

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Why is the JGB yield so low?

1. High private saving and the home bias of Japanese investors
2. Low opportunity cost of holding JGBs
    –   Low policy (short-term) interest rate
    –   Economic stagnation and deflation
    –   Zero risk weight on JGB in capital ratio calculation (Basle I II and III)
3. Expectation of drastic fiscal reform in the future
    –   Trust in the (future) government actions
    –   Room to increase the tax rate, especially VAT (currently 5%)

•   Anything that changes any of these conditions can cause a crisis

Three Potential Triggers

1. Saving trigger
   - When the debt exceeds the total private sector financial assets, the Japanese government cannot rely on domestic investors anymore
   - Foreigners would demand higher risk premia for exchange rate risk and credit risk
2. Fundamental trigger
   - Anything that increases the risk adjusted returns on alternatives is a bad news for JGB
3. Expectation trigger
   - When people lose the trust that the government will drastically change the fiscal policy

1. Saving Trigger

- Situation that domestic investors hold almost all of the Japanese government debt will not continue

- Because the private saving rate has started to decline and will continue to decline (consequence of rapid aging)

Table 2. JGB holders

	2005 March		2006 March		2007 March		2008 March		2009 March		2010 March	
	tril. Yen	(%)	tril. Yen	(%)	tril. Yen	(%)	tril. Yen	(%)	tril. Yen	(%)	tril. Yen	(%)
General Government	2	0.3%	7.4	1.1%	3.6	0.5%	2.5	0.4%	2.5	0.4%	1.9	0.3%
Public Pension	57.6	9.0%	61.5	9.2%	68.3	10.1%	78.1	11.2%	80.1	11.8%	76.3	11.2%
FILP	48.8	7.6%	39.4	5.9%	23.9	3.6%	10.9	1.6%	1.2	0.2%	0.8	0.1%
Postal Saving	109.7	17.1%	126.2	18.9%	140	20.8%	—	—	—	—	—	—
Postal Insurance	55.1	8.6%	57	8.5%	61	9.1%	—	—	—	—	—	—
Bank of Japan	92.1	14.3%	86.7	13.0%	71	10.6%	63.7	9.2%	55.9	8.2%	51.2	7.5%
Private Financial Institutions	218.6	34.1%	218.5	32.7%	216.1	32.1%	439.7	63.3%	441.6	64.9%	464.5	68.1%
banks	111.6	17.4%	114.5	17.2%	101.6	15.1%	246.4	35.5%	246.2	36.2%	258.7	37.9%
insurance	54.8	8.5%	58.4	8.7%	61.8	9.2%	129.2	18.6%	135.1	19.8%	139.9	20.5%
private pension funds	21.3	3.3%	24	3.6%	26.2	3.9%	26.8	3.9%	25.6	3.8%	28	4.1%
others	31	4.8%	21.6	3.2%	26.5	3.9%	37.3	5.4%	34.7	5.1%	37.9	5.6%
Overseas	26.4	4.1%	30.2	4.5%	40.2	6.0%	47.4	6.8%	43.9	6.5%	31.6	4.6%
Household	21.8	3.4%	28	4.2%	33.4	5.0%	36.3	5.2%	36	5.3%	34.4	5.0%
Others	9.6	1.5%	12.4	1.9%	15.2	2.3%	16.5	2.4%	19.6	2.9%	21.4	3.1%
Total	641.8	100.0%	667.3	100.0%	672.7	100.0%	695	100.0%	680.9	100.0%	682.1	100.0%

1950

2010

Baby boomers' income is at the peak

Male

Female

Male

Female
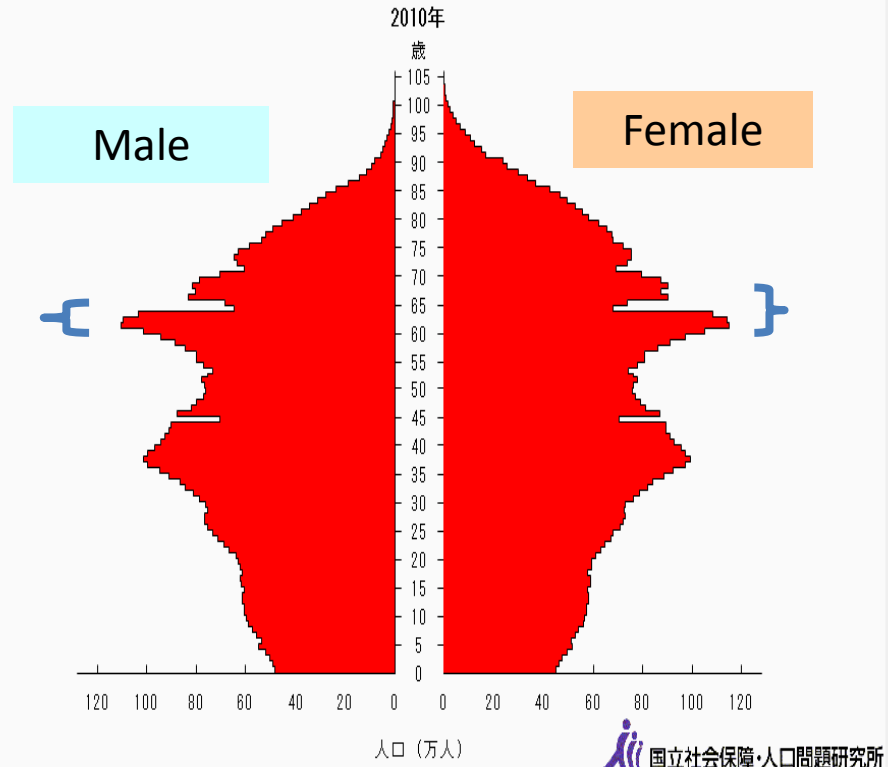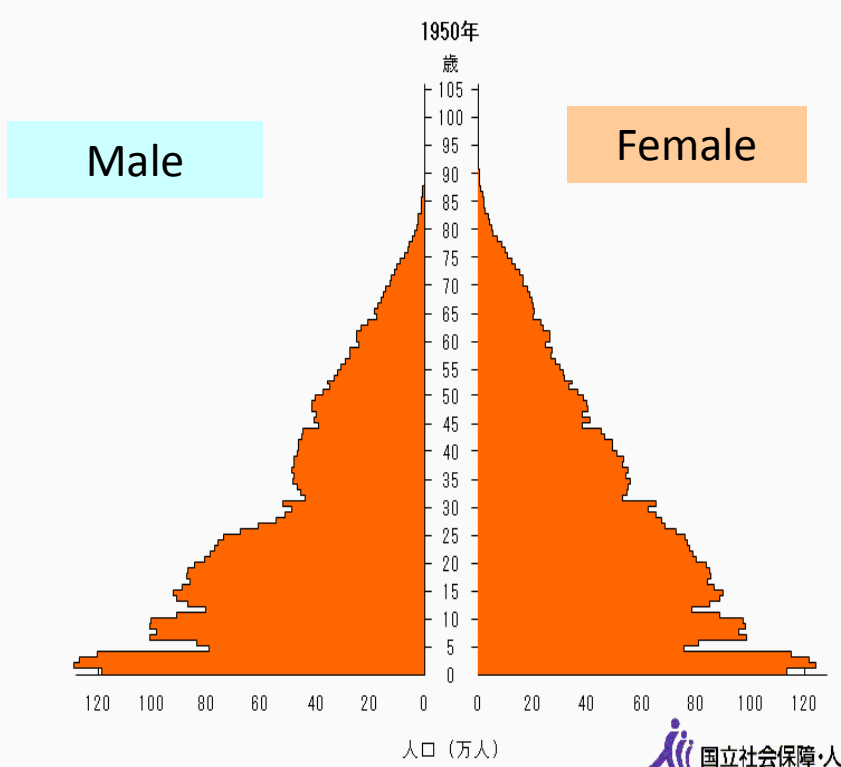
Figure 4. Aggregate Saving to GDP Ratio: 2010-2050
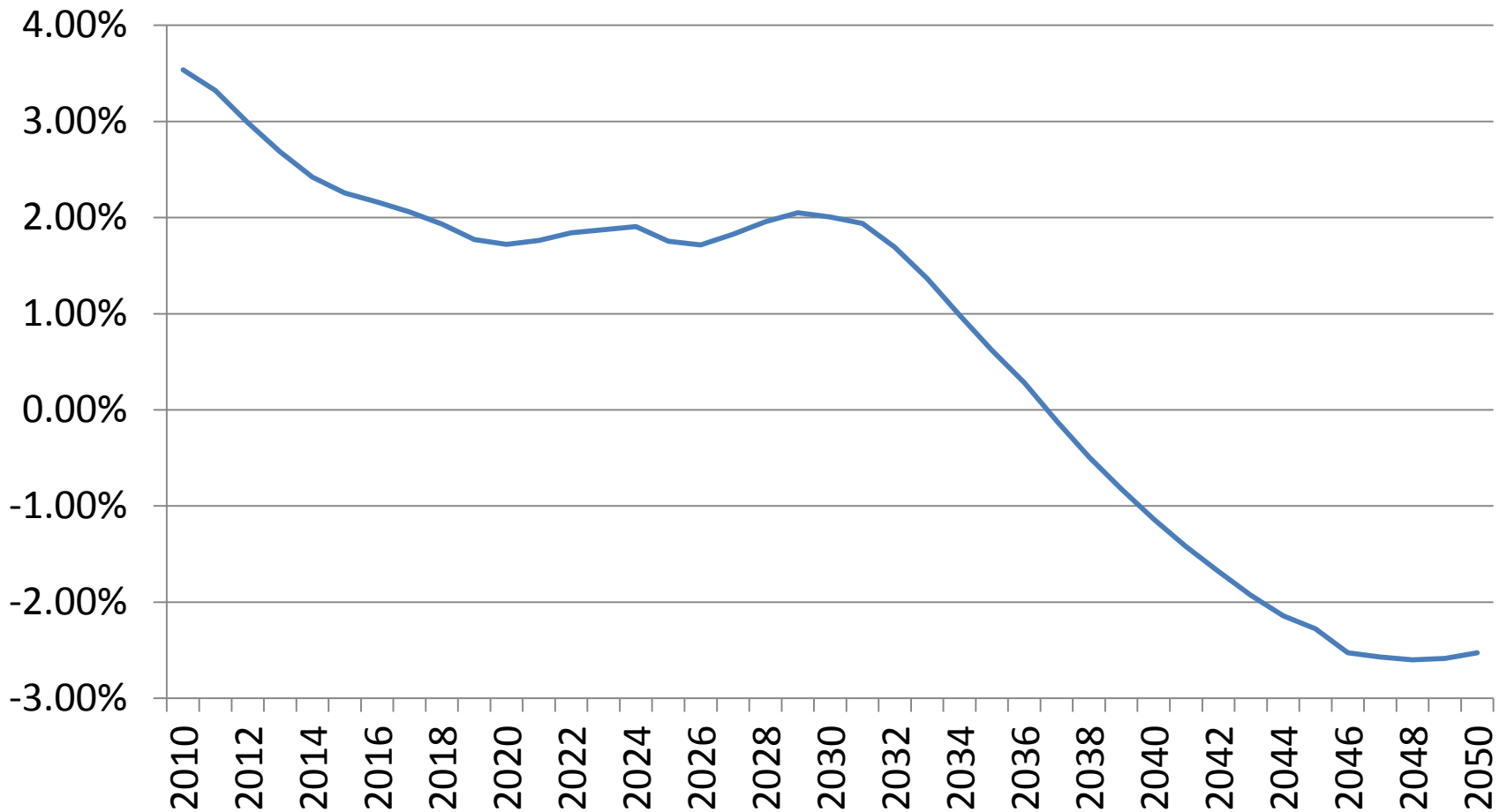
When does the fiscal crisis happen?

- When all private savings (less stock holdings) are saturated by JGBs, there are no more Japanese investors who can hold additional JGBs.
- This is the absolute end, like hitting a wall
- A crisis is likely to occur way before this point

Three Alternative Assumptions on the Future Interest Rates

R1: Interest rate stays at the level of 2010 (1.3%) as long as the growth rate does not exceed that level. When the growth rate exceeds 1.3%, the interest rate is equal to the growth rate.

R2: Interest rate starts at 1.3%. For every 1% increase in the debt to GDP ratio over its level in 2010, the interest rate increases by 2 basis points (0.02%).

R3: Interest rate starts at 1.3%. For every 1% increase in the debt to GDP ratio over its level in 2010, the interest rate increases by 3.5 basis points (0.035%).

Table 7. Per-worker labor productivity increase of 2.09%

	$\triangle$rGDP =	$\triangle$POP +	$\triangle$(wPOP /POP) +	$\triangle$(rGDP /wPOP)
2011–20	0.98%	−0.31%	−0.77%	2.09%
2021–30	1.30%	−0.62%	−0.15%	2.09%
2031–40	0.55%	−0.83%	−0.68%	2.09%
2041–50	0.57%	−0.99%	−0.50%	2.09%

Notes: Authors' calculation. Each row does not exactly add up as the equation suggests, due to approximation in ten-year average growth rates . $\triangle$POP and $\triangle$(wPOP/POP) are calculated from forecasts of IPSS, then $\triangle$(rGDP/wPOP) is assumed to be 2.09%, which was the average of 2001-2007. $\triangle$rGDP was derived from the identity;
Data Source: GDP from Cabinet Office, Japan for GDP ; and population from National Institute of Population and Social Security Research (IPSS)

File: DemographyJapan.xlsx

Figure 7. Government Debt and Private Sector Financial Assets: 2010-2050 (2.09% GDP per worker growth)
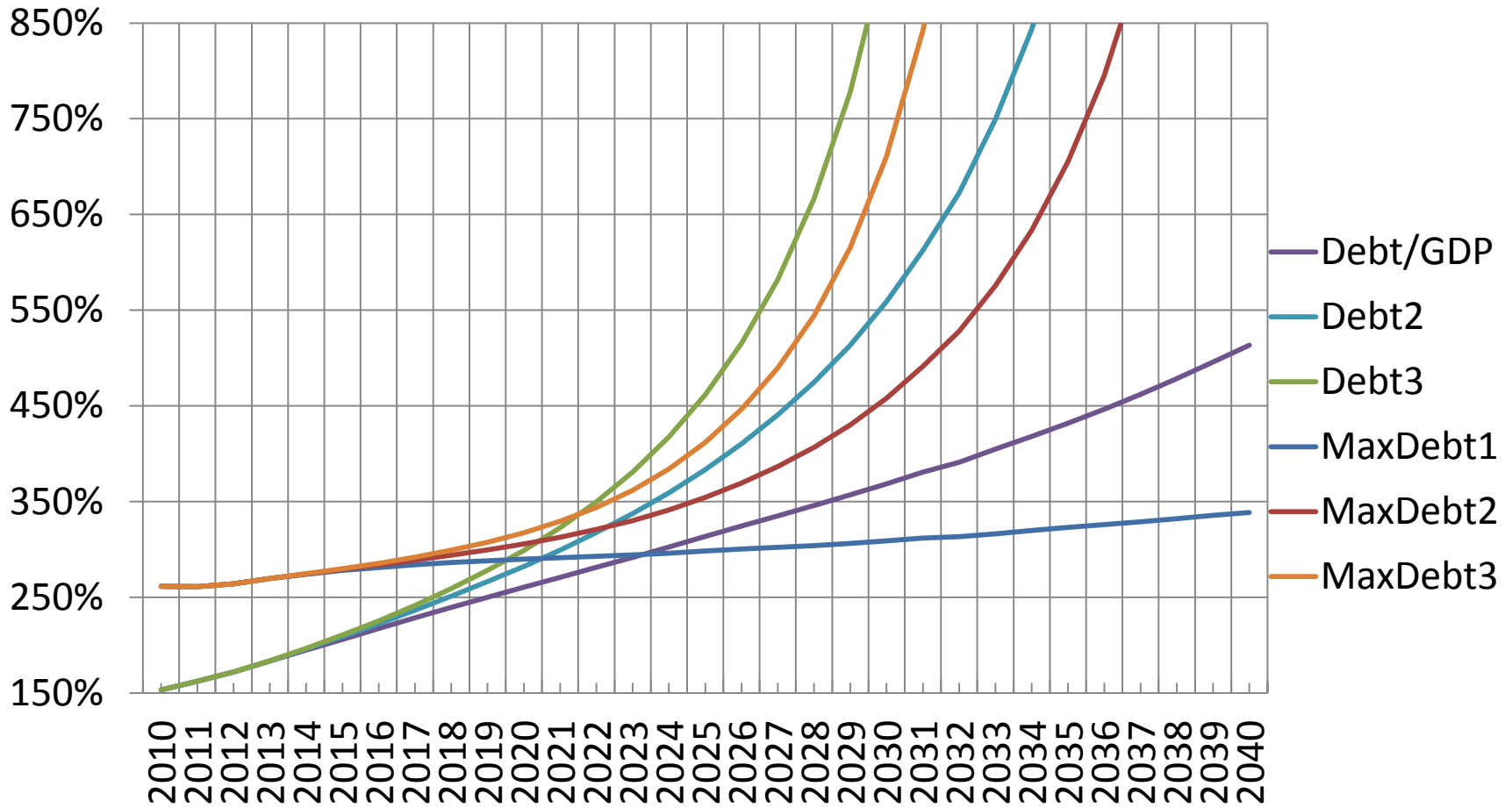
2. Fundamental Trigger

- Hard to predict when the rate of return on investments other than JGB improves

- Instead, we consider how vulnerable the fiscal condition is to sudden increase in the interest rate

- We calculate the (minimum) interest rate increase that would make the interest payment on the government debt exceed 35% of the tax revenue (considered to be a rough threshold for a crisis)

Figure 12. Increase in the Interest Rate that would Trigger a Crisis
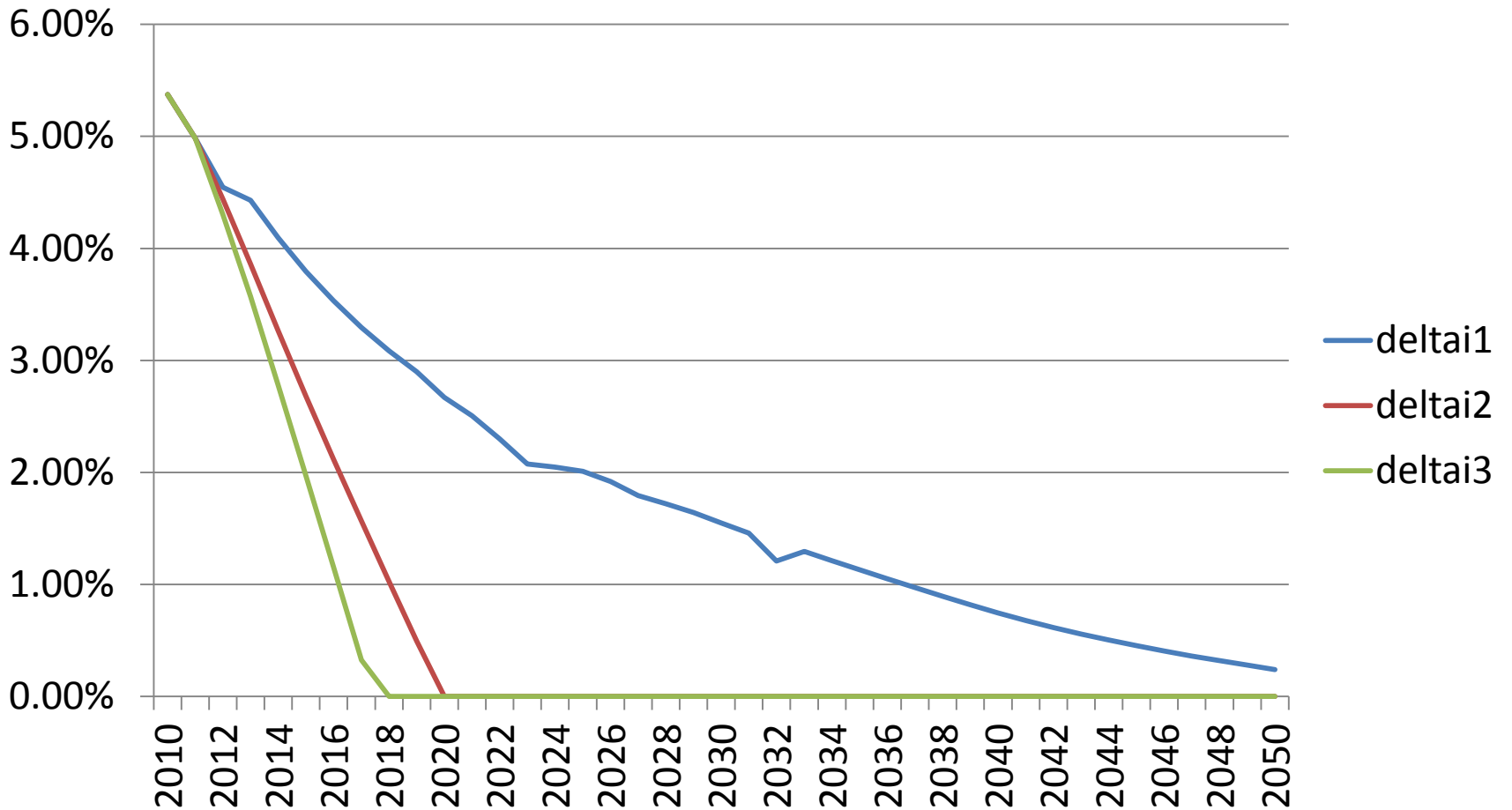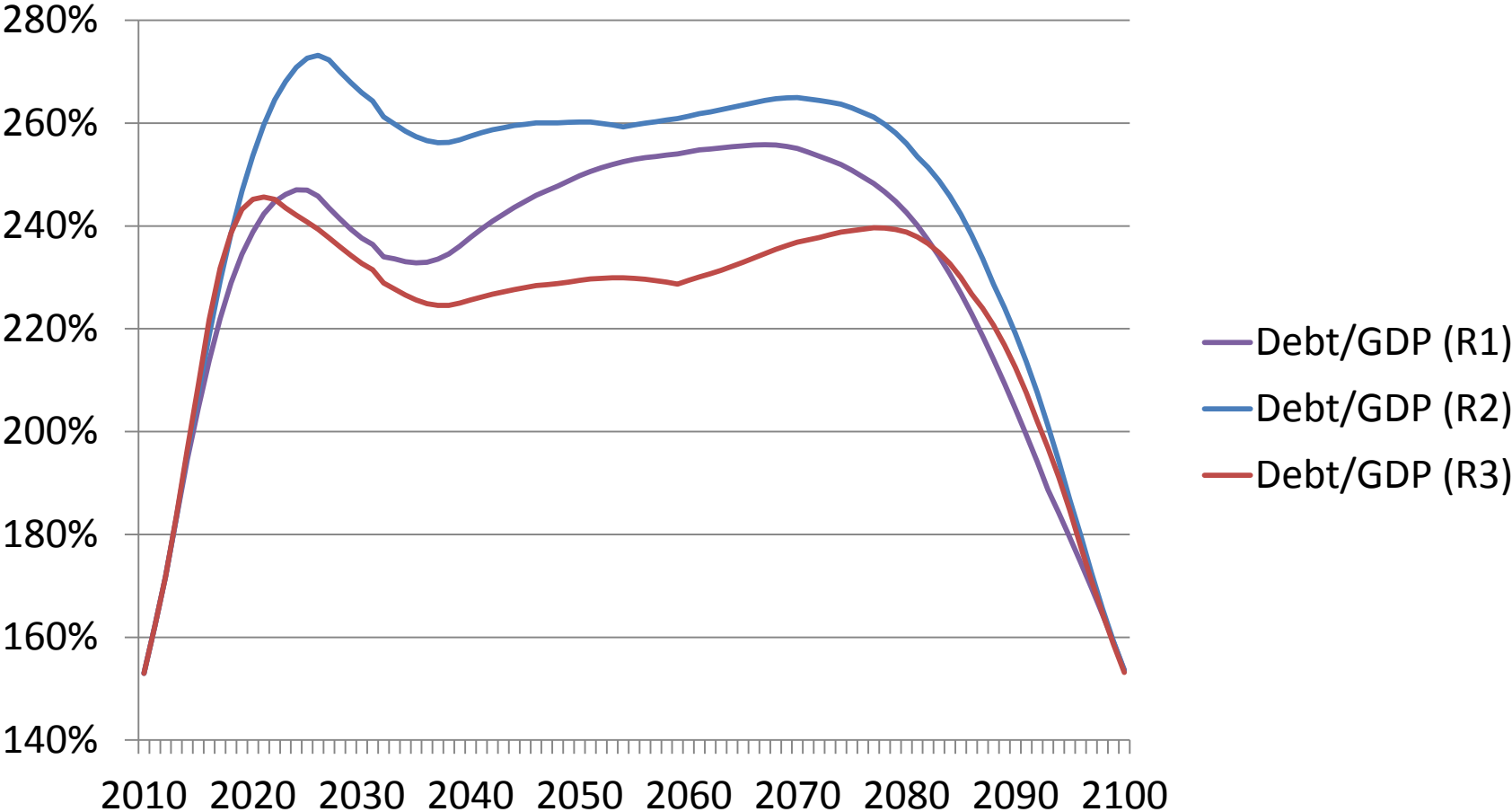
3. Expectation Trigger

- We show the existence of an expected path of future tax rates that eventually stabilize the debt to GDP ratio

- If the market currently has such expectation, the absence of crisis for JGB is understandable

- If the expectation changes (and this often happens suddenly and unexpectedly), this will result in a crisis

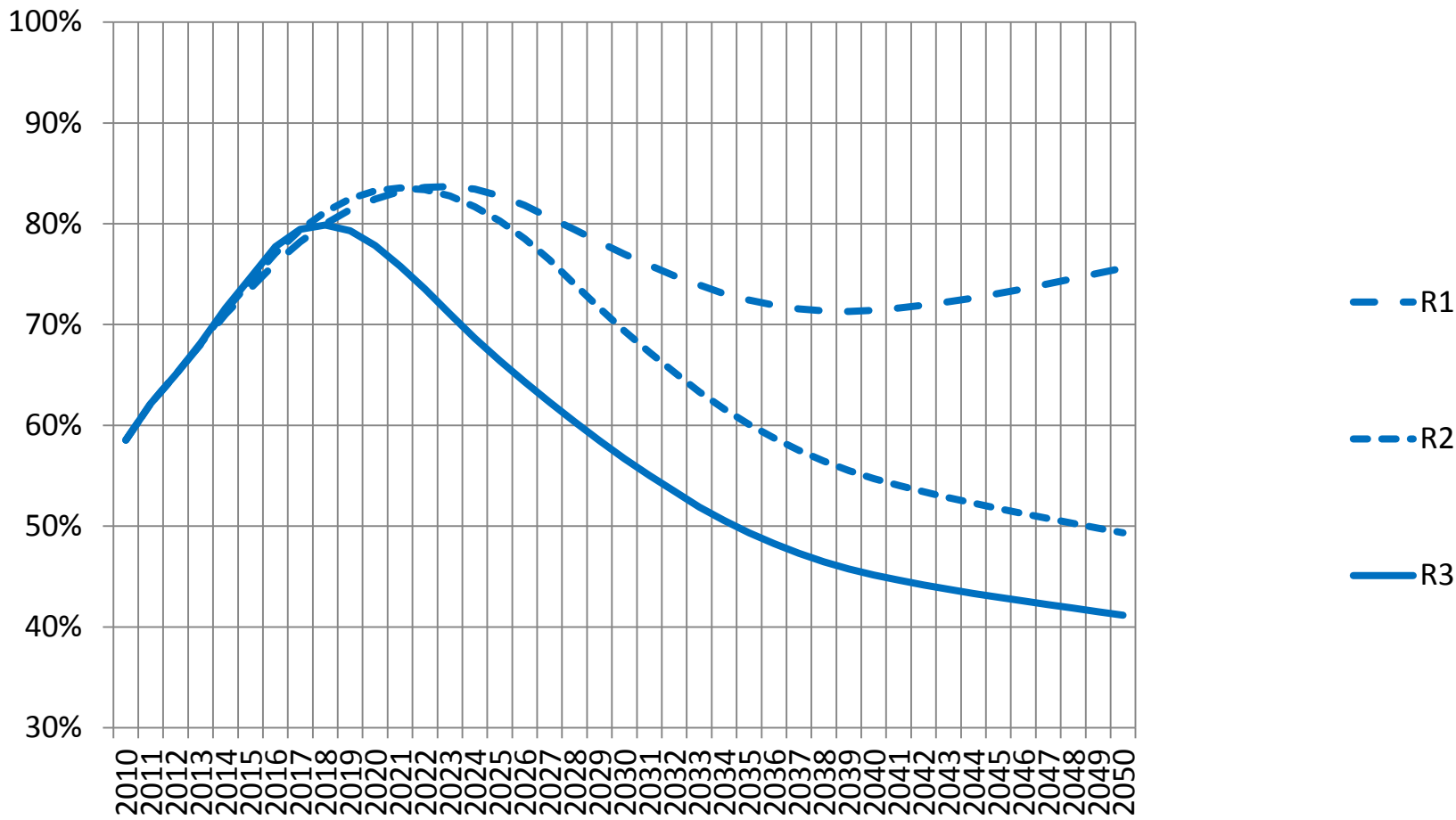# Figure 13. Sustainable Tax Policy under Each Interest Rate Assumption

sustainable tax rate under R1

sustainable tax rate under R2

sustainable tax rate under R3
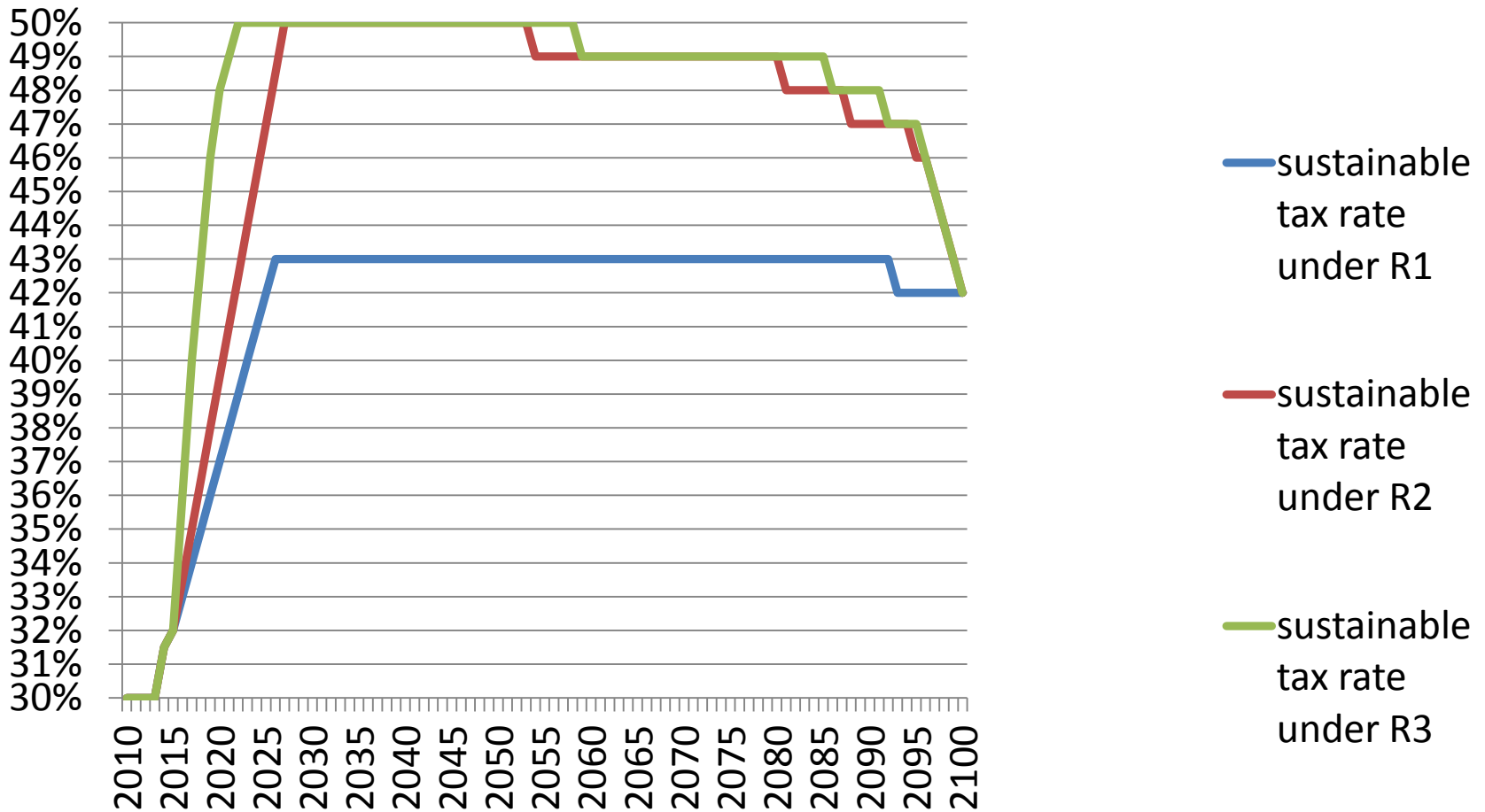
Figure 14. Debt/GDP Ratio with Sustainable Tax Policy

Legend:
- Debt/GDP (R1)
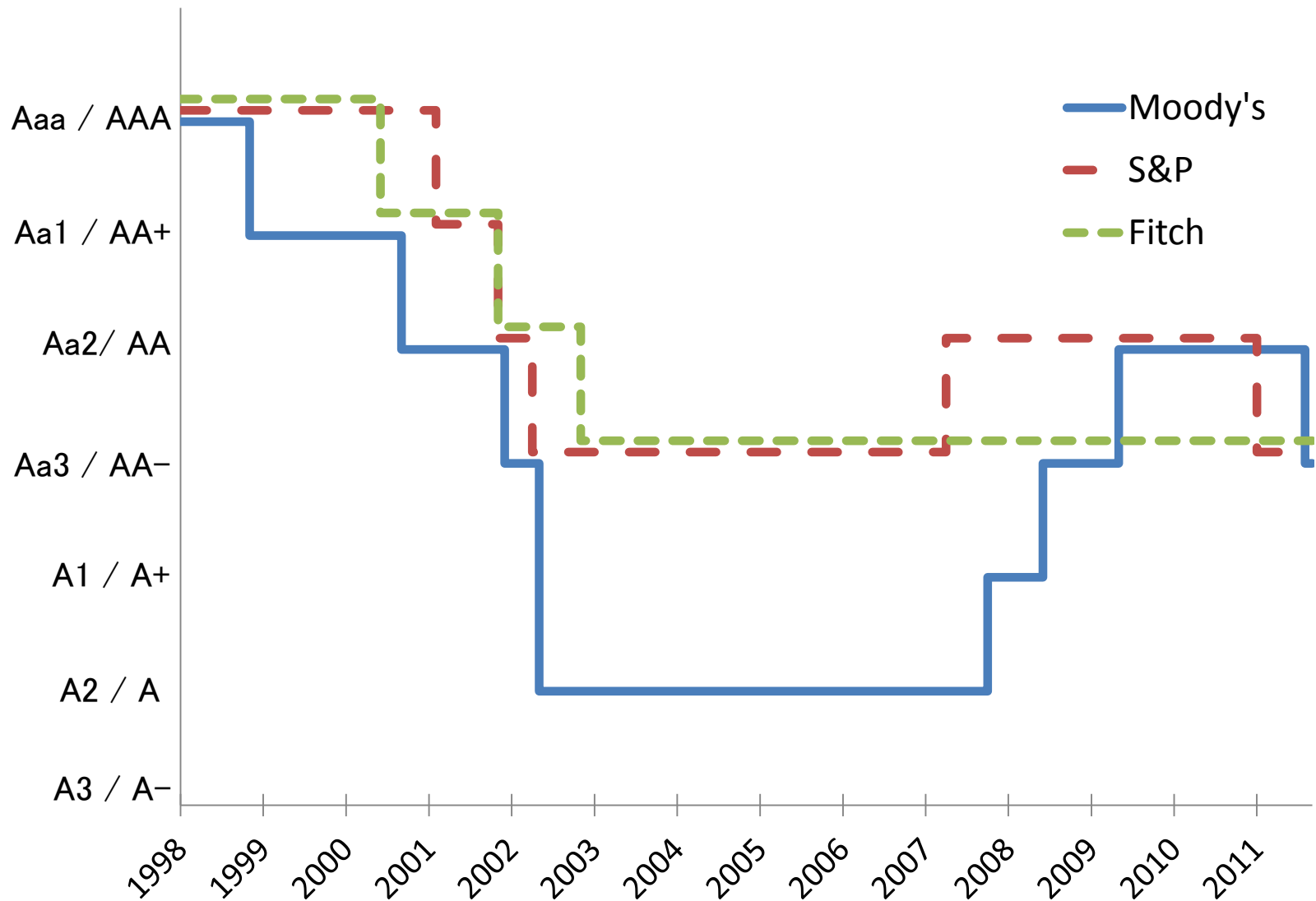- Debt/GDP (R2)
- Debt/GDP (R3)

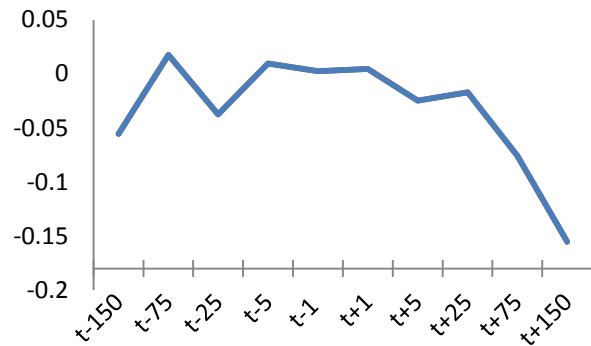# Figure 15. Debt to MaxDebt Ratio with Sustainable Tax Policy

One thing that would not be a trigger

- Downgrading by credit rating agencies
- They have been happening already
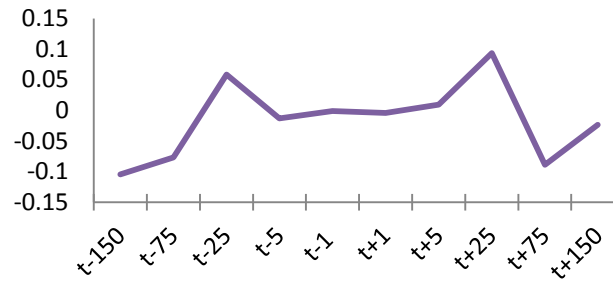
Fig 13. Japan's Sovereign Ratings

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Figure 14. Event Analysis, downgrade on JGB rate
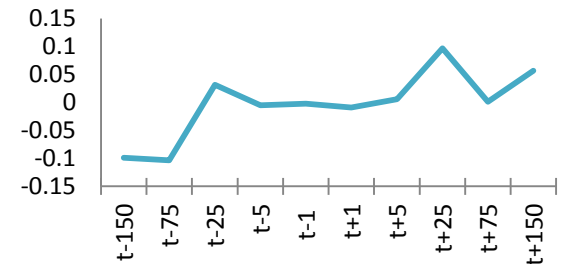

panel 1 JGB interest rate(SP, downgrades)

panel 2 JGB interest rate(Moodys. downgrade and negative watch)

panel 3. JGB interest rate(Moodys, including upgrades)

Earthquake/Tsunami of March 2011

- Total property cost is estimated to be 3% to 5% of GDP
- The government issued Reconstruction Bonds of 11.6 trillion yen (2.4% of GDP) in fiscal 2011 and plans to issue 12.7 trillion yen (2.6% of GDP) in fiscal 2012
  - These additional bond issues have only small impact
- We consider potential delay of tax increase (from 2012 to 2017)
  - The additional delay can have substantial impact
- Cost of nuclear decommissioning is estimated to be substantial. We add 1% of GDP to government expenditure for fiscal 2012, 2013, 2014, 2015
  - Combined with delay, this would be fatal

Figure 18. Debt to MaxDebt ratio with reconstruction expenditures

Legend:
- With Delayed Tax Increase
- With Reconstruction Expenses
- Sustainable
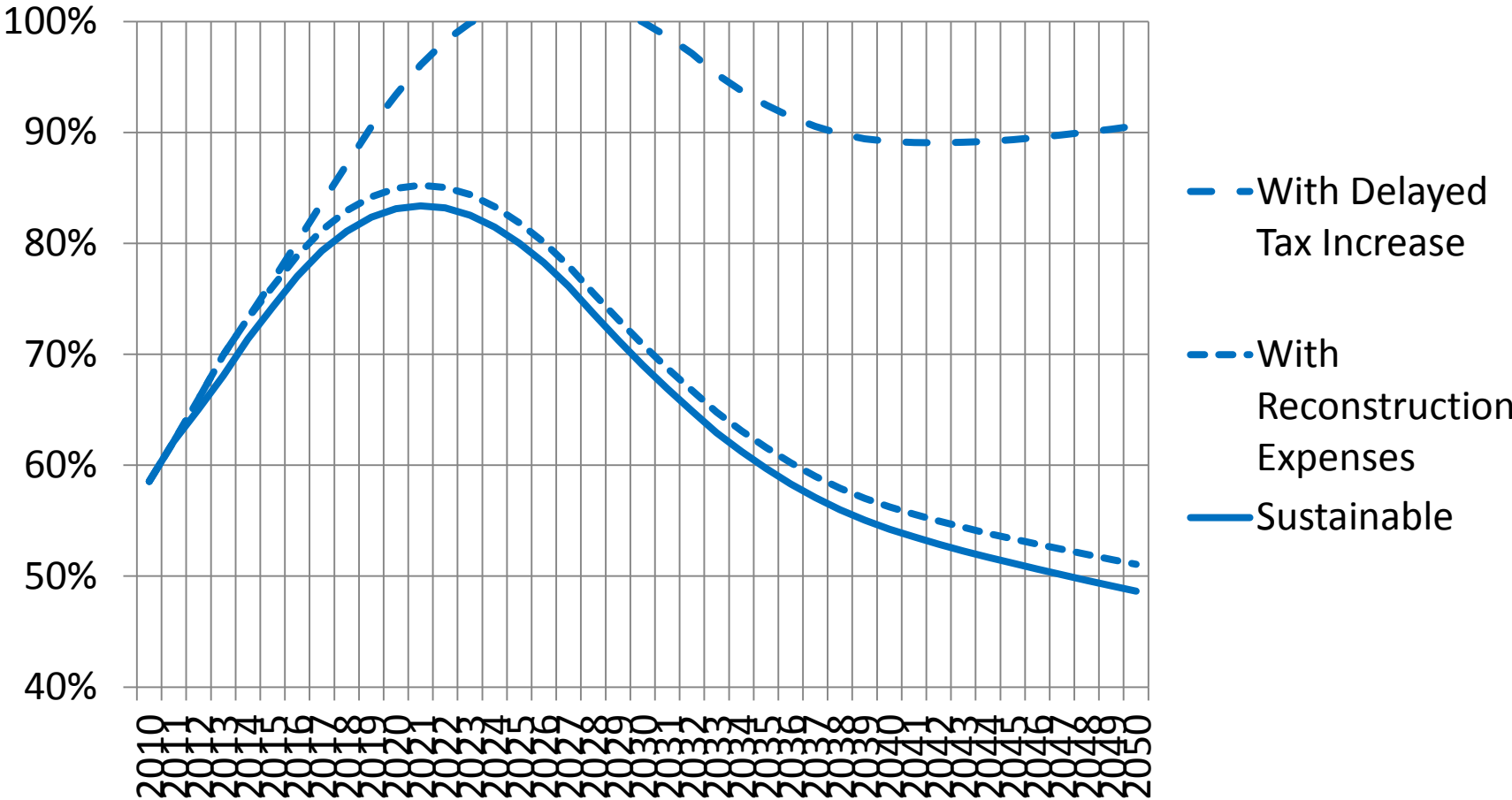
Figure 19. Debt to MaxDebt ratio with reconstruction and nuclear cleanup expenses

Legend:
- With Delayed Tax Increase
- With Reconstruction and Nuclear Cleanup Expenses
- Sustainable