

Discussion on
**“Worse Than You Think: Public Debt Forecast
Errors in Advanced and Developing Economies”**

February 26, 2021

Annual Conference, European Fiscal Board

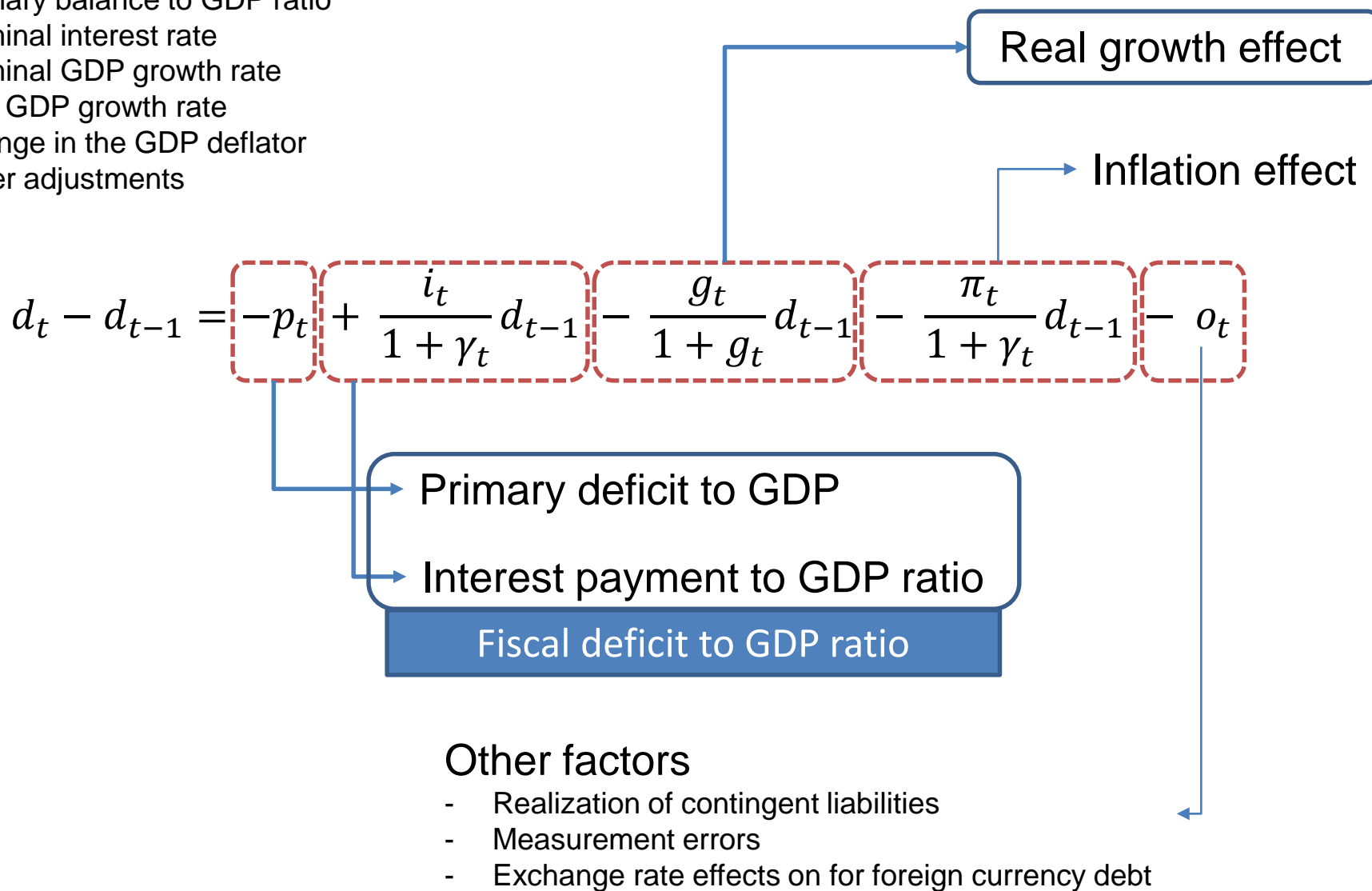
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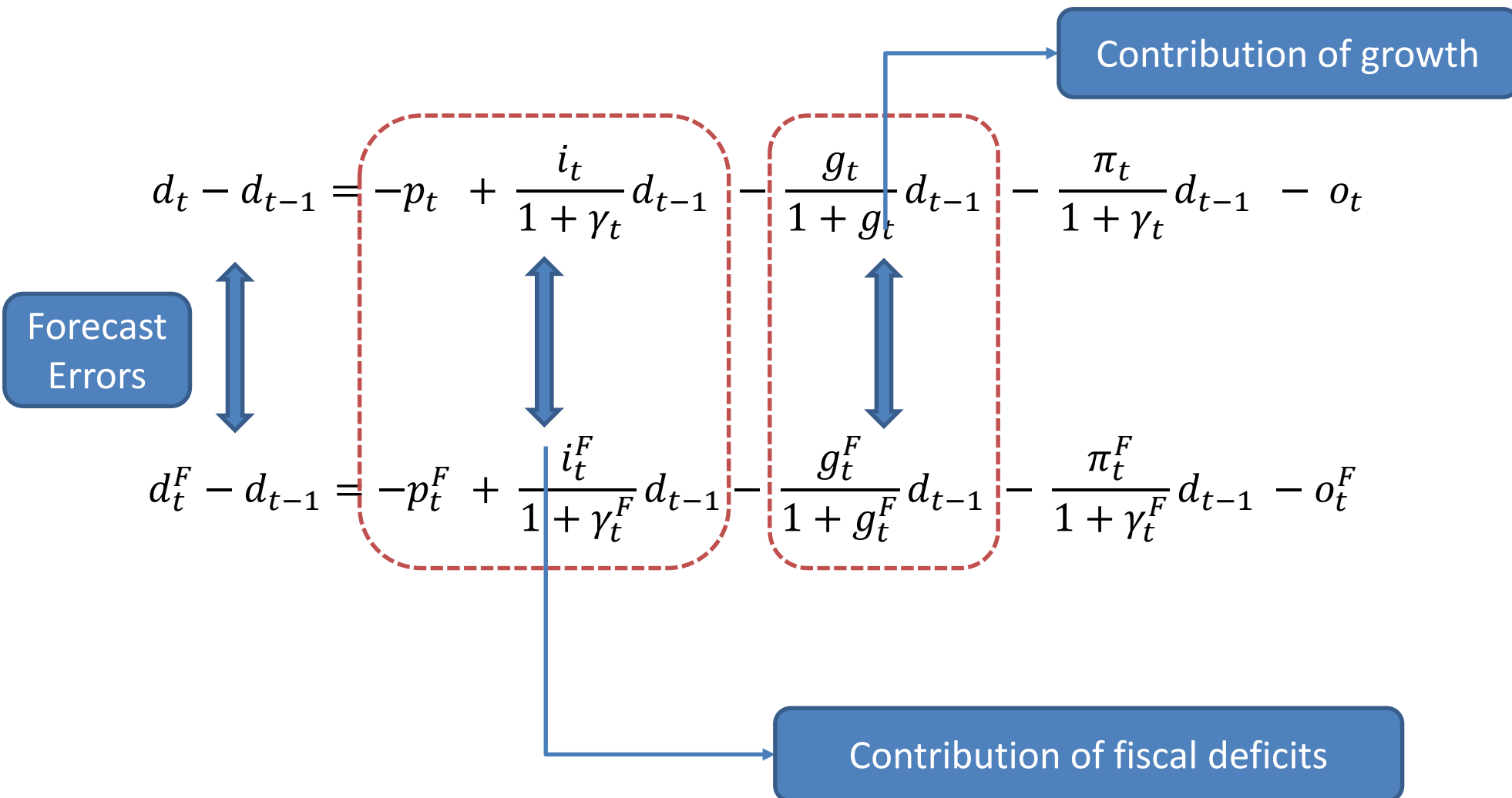
- Key findings of the paper: *Worse than you think*
- Sources of forecast errors for debt-to-GDP ratio
- Case for Japan
- Is this time (really) different?

Sources of forecast errors for d_t

d_t : debt to GDP ratio
 p_t : primary balance to GDP ratio
 i_t : nominal interest rate
 γ_t : nominal GDP growth rate
 g_t : real GDP growth rate
 π_t : change in the GDP deflator
 o_t : other adjustments



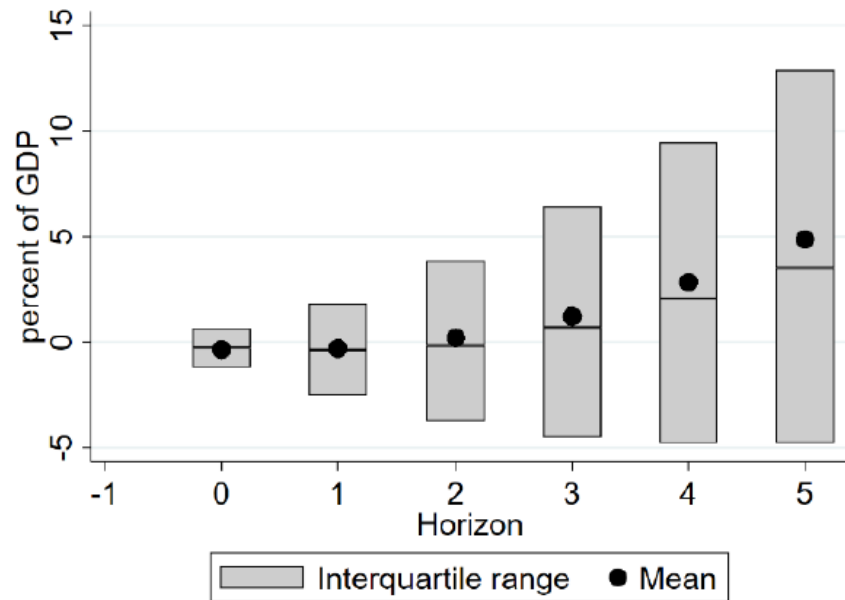
Sources of forecast errors for d_t



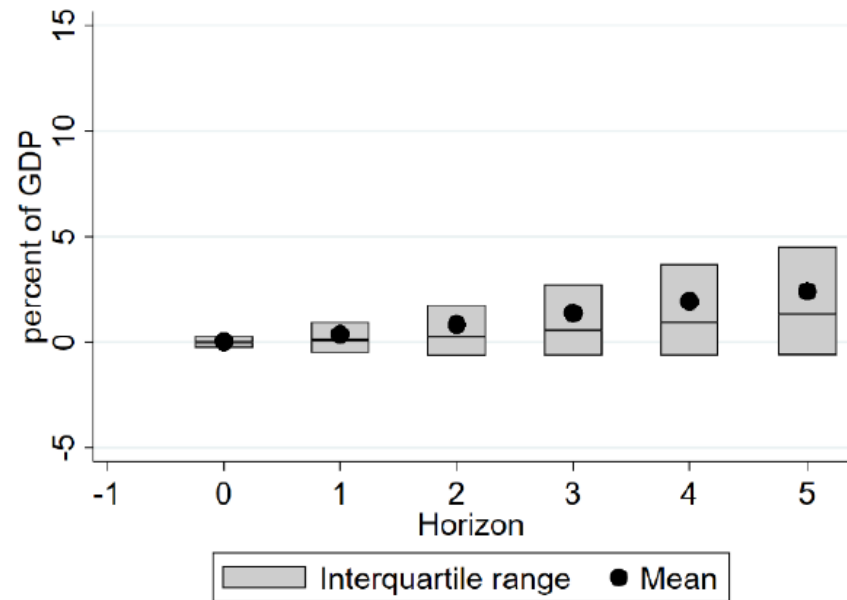
- Contribution of fiscal deficit to forecast errors is much larger than contribution of growth.

Figure 12: IMF Forecast Errors: Contribution of Fiscal Deficits and Growth

Contribution of Fiscal Deficit Forecast Errors



Contribution of Growth Forecast Errors

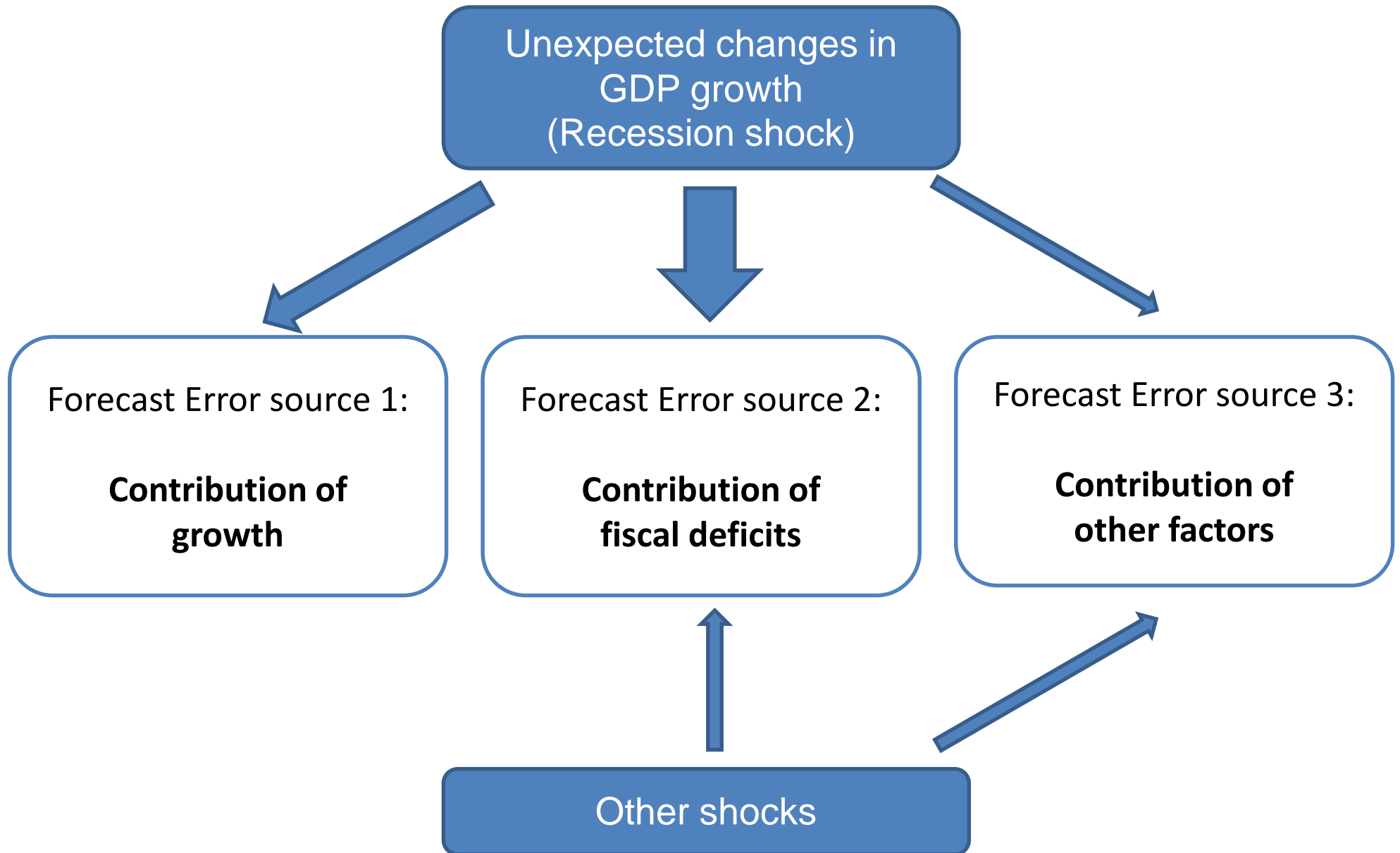


Sources of forecast errors for d_t

	(1)	(2)	(3)	(4)
	All Countries			
Growth FE, t=0		-0.161 (0.274)		-0.166 (0.331)
Growth FE, t=1		-0.766*** (0.134)		-0.531*** (0.134)
Growth FE, t=2		-0.695*** (0.0983)		-0.616*** (0.116)
Growth FE, t=3		-0.838*** (0.0926)		-0.557*** (0.120)
Growth FE, t=4		-1.001*** (0.146)		-0.666*** (0.170)
Growth FE, t=5		-1.240*** (0.201)		-1.067*** (0.206)
Fiscal deficit FE, t=0			0.100 (0.207)	0.223 (0.203)
Fiscal deficit FE, t=1			0.133* (0.0738)	0.0792 (0.0901)
Fiscal deficit FE, t=2			0.582*** (0.199)	0.427** (0.181)
Fiscal deficit FE, t=3			0.420 (0.259)	0.163 (0.258)
Fiscal deficit FE, t=4			1.015*** (0.278)	0.933*** (0.298)
Fiscal deficit FE, t=5			0.131 (0.214)	-0.0125 (0.203)
Constant	8.707*** (1.255)	4.065*** (1.124)	6.527*** (1.064)	3.771*** (0.996)
Observations	3,383	3,378	3,360	3,356
R-squared	0.000	0.218	0.226	0.335

- Reduced form regressions shows that **forecast errors in growth projections** are significant drivers of debt forecast errors.
- **Recession** drive forecast errors both in AEs and EMDEs.
- **Fiscal deficit projections** play only limited role.

Sources of forecast errors for d_t



Sources of forecast errors for d_t

Impacts of **recession** (decline of GDP growth) on fiscal deficits can be larger, if:

- **Spending items** are more **counter-cyclical** (increasing), or **non-cyclical** (not declining together with GDP)
- **Revenue items** are more **cyclical** (declining together with GDP), or discretionary reduced



Responsiveness of fiscal deficits to changes in GDP can vary across countries and years, dependent on **policy stance** and **spending / revenue composition**.



Forecasting errors are also affected by these factors.

Categories of spending and revenues

■ Spending items

	Elasticity	Examples in Japan
Counter-cyclical spending	$\varepsilon_{\text{exp,gdp}} < 0$	<ul style="list-style-type: none">• Unemployment benefits• Discretionary public works• Subsidies and transfers to businesses
Non-cyclical spending	$0 \leq \varepsilon_{\text{exp,gdp}} < 1$	<ul style="list-style-type: none">• Social spending [public pension, healthcare, public assistance]• Interest payment (in a short run)
Cyclical spending	$\varepsilon_{\text{exp,gdp}} = 1$	<ul style="list-style-type: none">• Wage and salary for public employees• Purchase of goods and services

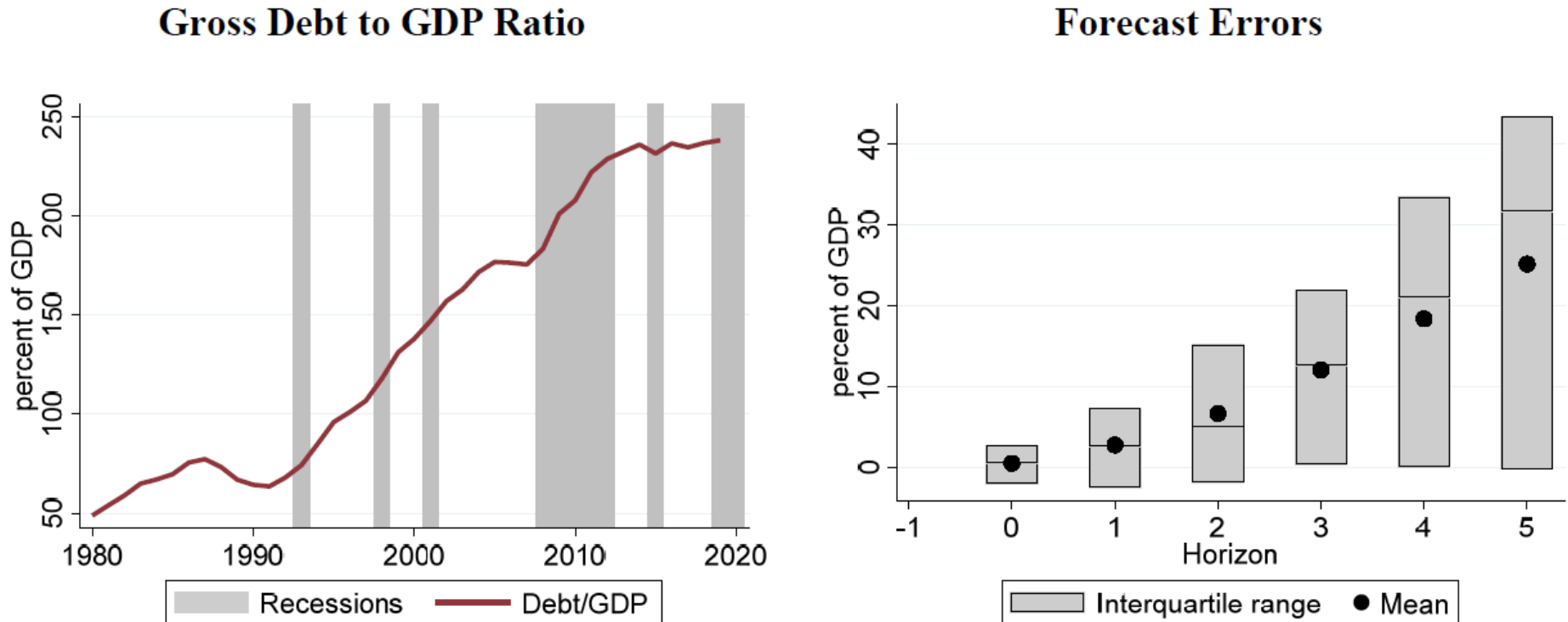
■ Revenue items

	Elasticity	Examples in Japan
Cyclical revenue	$\varepsilon_{\text{rev,gdp}} \geq 1$	<ul style="list-style-type: none">• Corporate income tax• Personal income tax
Non-cyclical spending	$0 \leq \varepsilon_{\text{rev,gdp}} < 1$	<ul style="list-style-type: none">• Property tax• Social contribution (levied on wages with flat rate)• Consumption tax

Case for Japan: forecast errors for d_t

- Throughout the 1990s and up to the GFC, forecast errors for Japan ranged between 20 to 60% of GDP.

Figure 14: Japan: Debt Levels and Forecast Errors

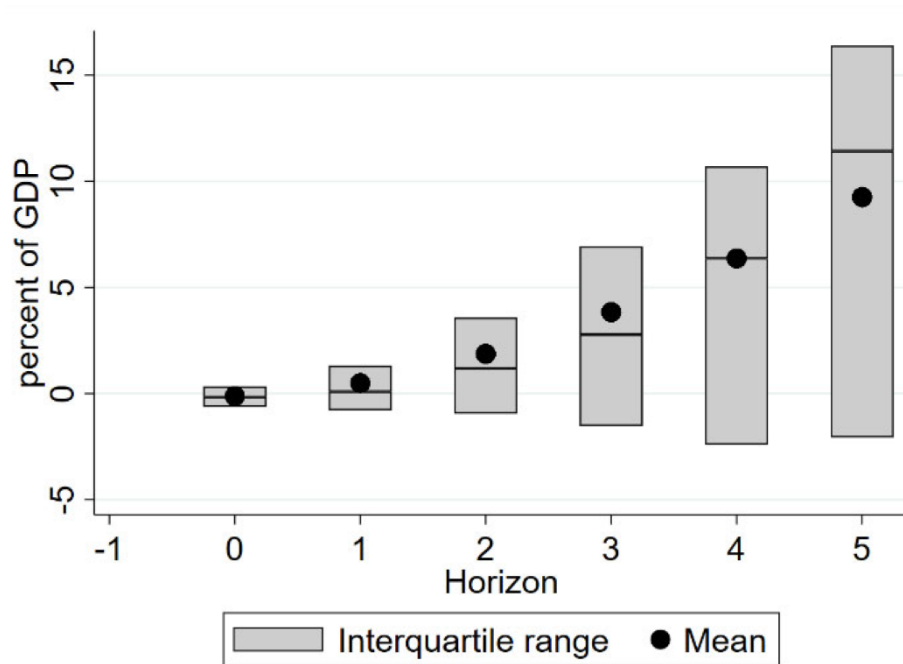


Case for Japan: forecast errors for public debt

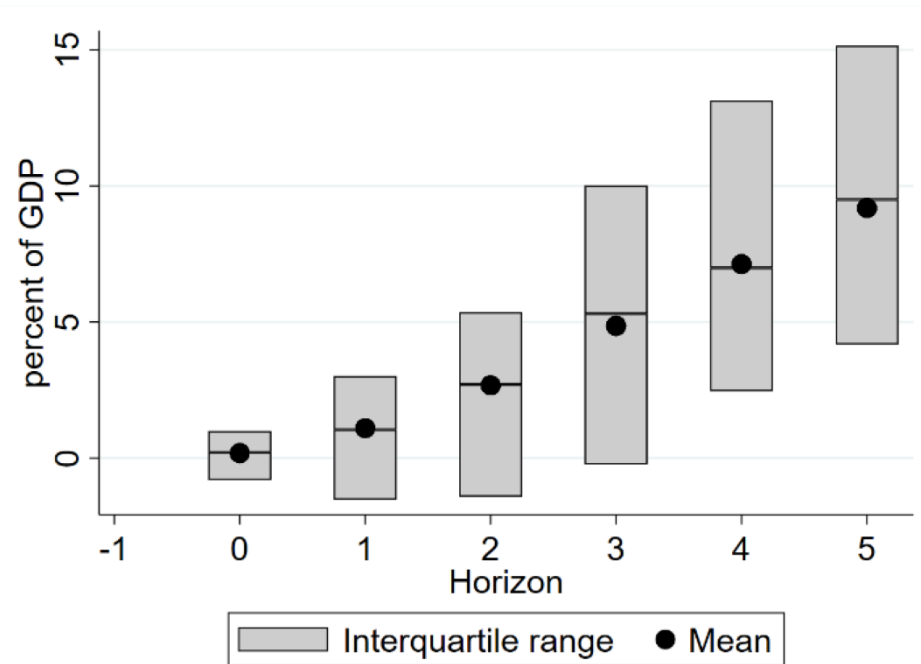
- Both fiscal deficit and growth contribute to the forecast errors for Japan.

Figure 17: Japan: Contribution of Fiscal Deficit and Growth

Contribution of Fiscal Deficit



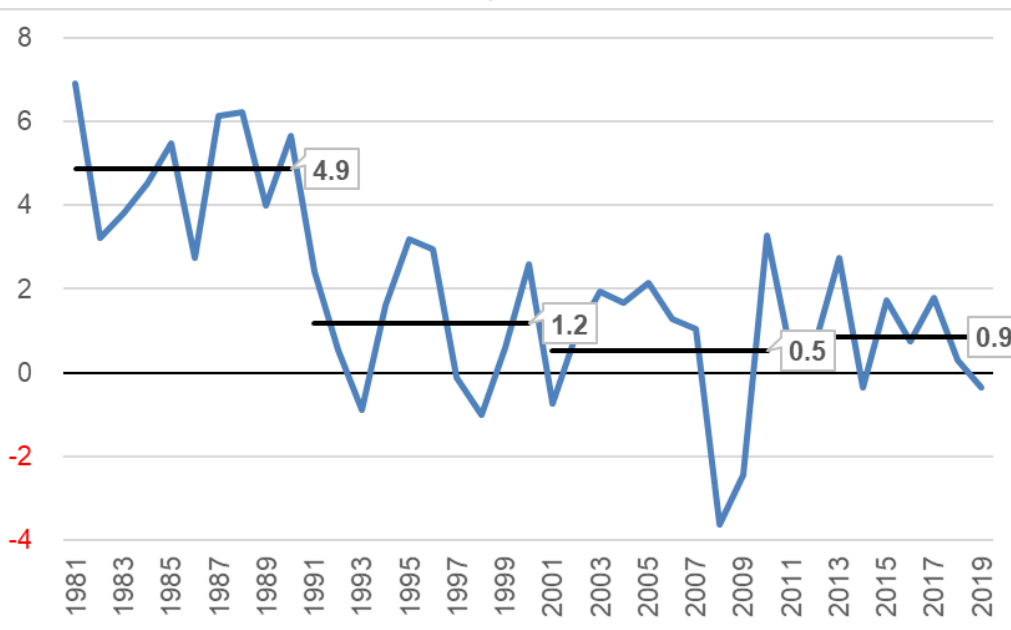
Contribution of Growth



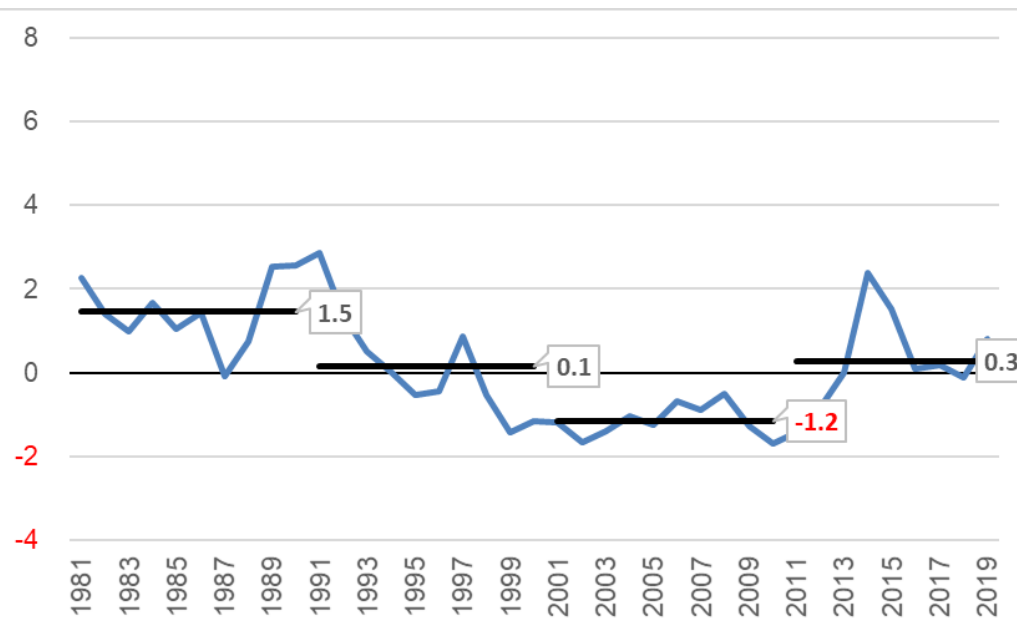
Case for Japan: growth rate and inflation rate

- Big shift of GDP growth rate before and after 1990 – which may have caused “optimistic bias” for GDP growth forecast after 1990.

Real GDP growth rate, %



Inflation rate (GDP deflator), %



- Changes in inflation rate have been observed, which may have also contributed to the forecast error after 1990.

Case for Japan : spending and revenue items

- Decline of **counter-cyclical spending** and **cyclical revenue** has contributed to smaller forecasting errors in recent years.
- However, significant increase in **non-cyclical spending** has contributed to larger forecasting errors (while interest payment declined).

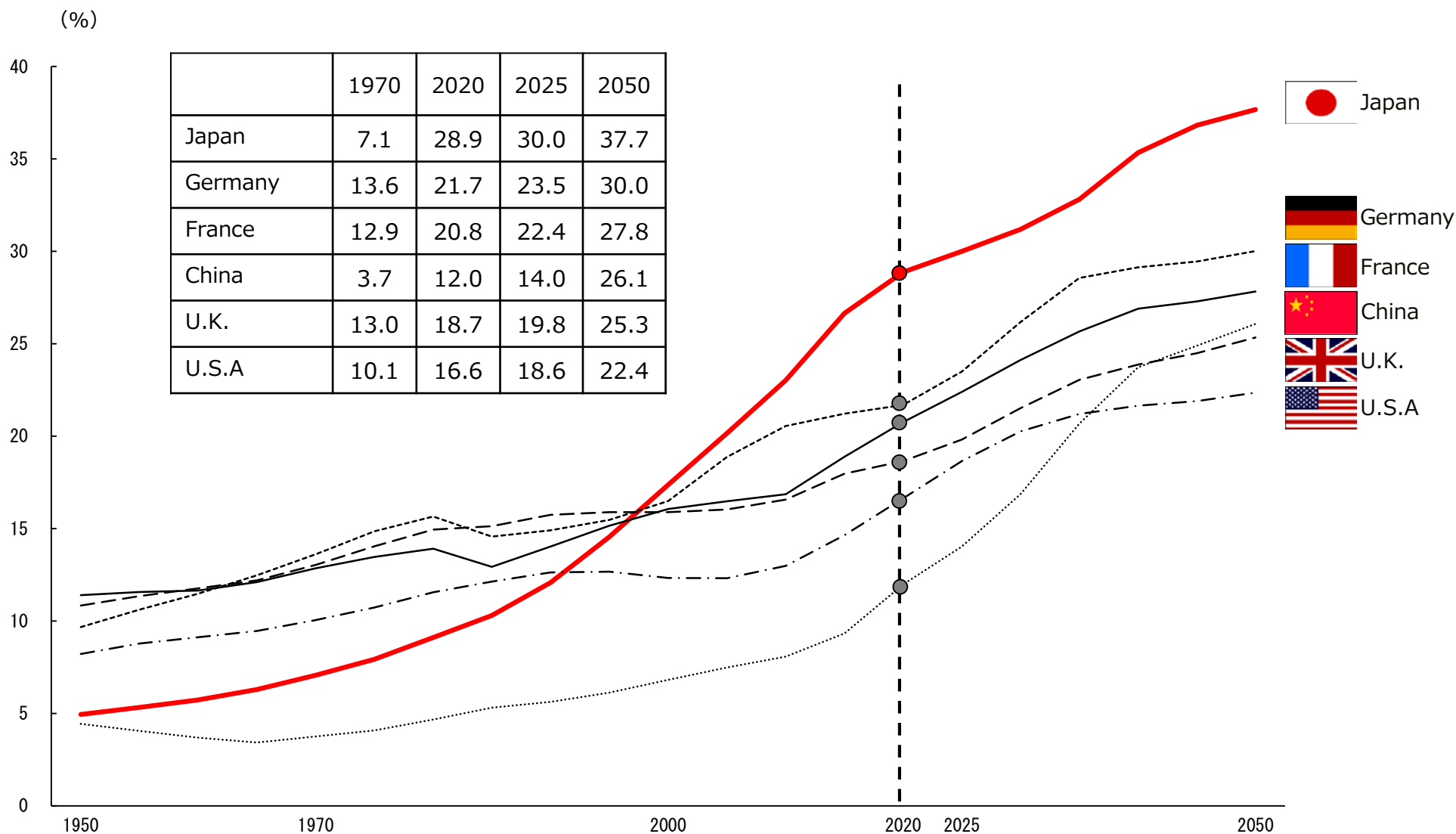
■ Spending items (% of GDP)

	1980's	1990's	2000's	2010's	
Counter-cyclical spending	8.8%	9.6%	7.4%	6.8%	↓
Non-cyclical spending	14.0%	15.0%	19.0%	22.9%	↑
(inc. interest payment)	(3.7%)	(3.3%)	(2.5%)	(2.0%)	↓
Cyclical spending	8.8%	8.9%	9.3%	9.1%	→

■ Revenue items (% of GDP)

	1980's	1990's	2000's	2010's	
Cyclical revenue	11.1%	9.6%	7.6%	8.2%	↓
Non-cyclical spending	16.9%	18.9%	20.7%	24.3%	↑

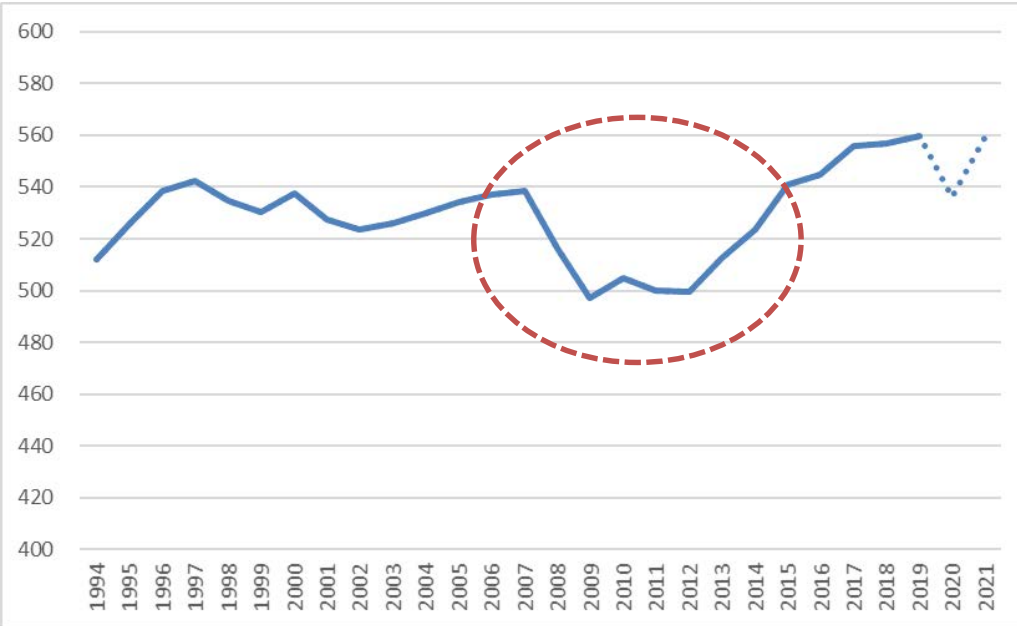
Case for Japan : population aging (share of age 65 and over)



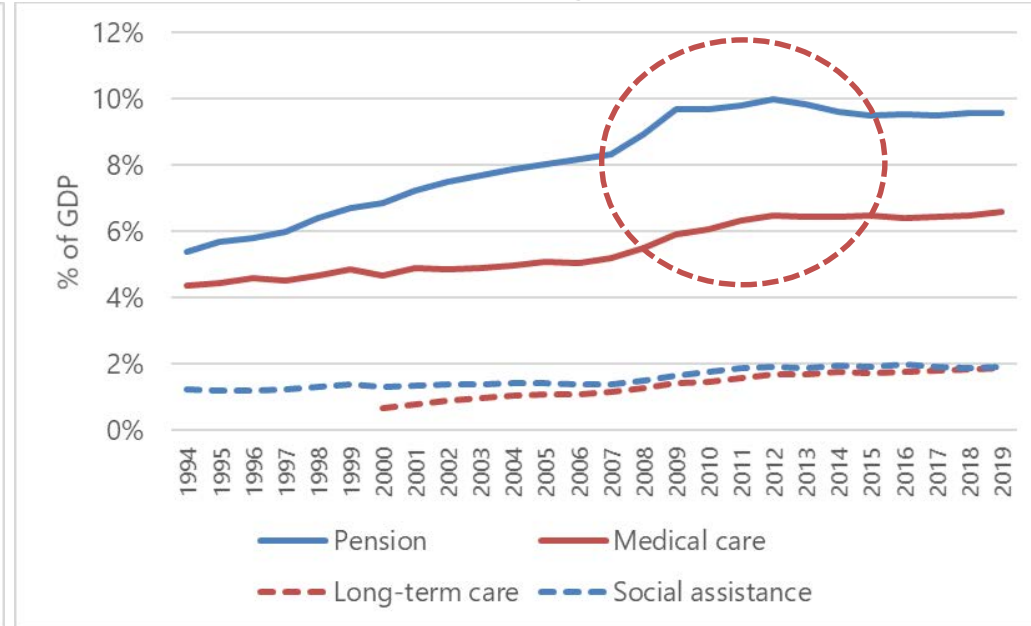
Case for Japan : non-cyclical spending at shocks (GFC)

- Decline of GDP after Global Financial Crisis caused a significant increase the ratio of social spending to GDP.

Nominal GDP, level, trillion yen



Social spending, % of GDP

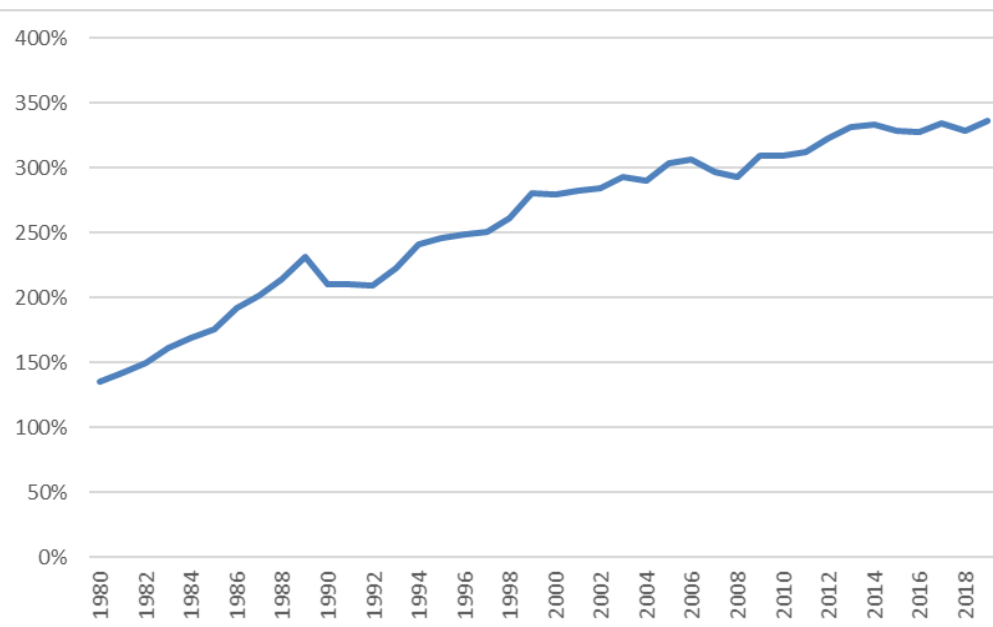


- It took 8 years to get back to the previous level of GDP before GFC.

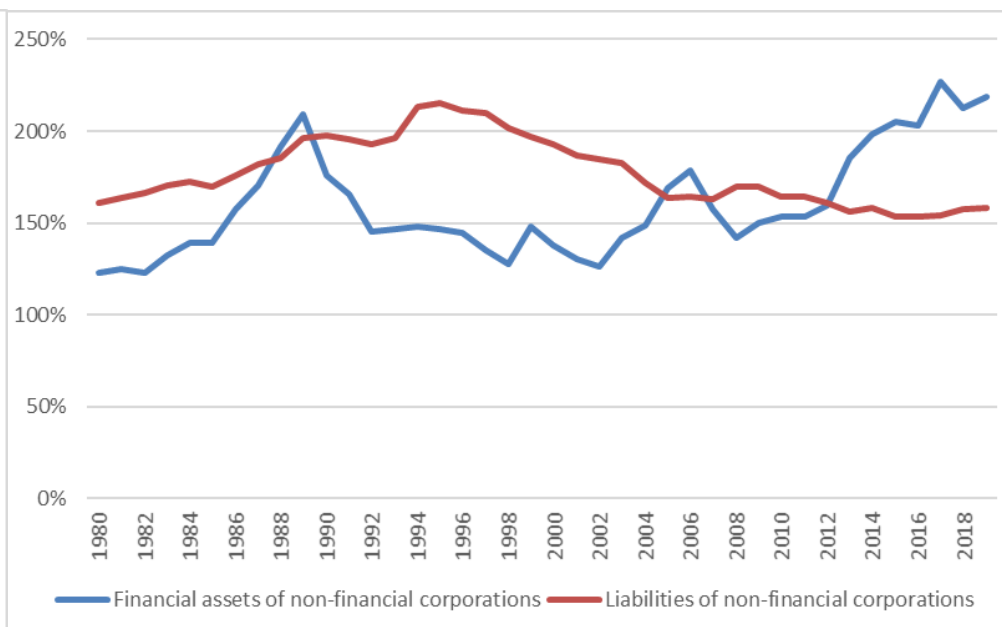
Case for Japan: financial assets held by private sectors

- Financial assets by households and non-financial corporations have steadily increased.

Financial assets of households, % of GDP



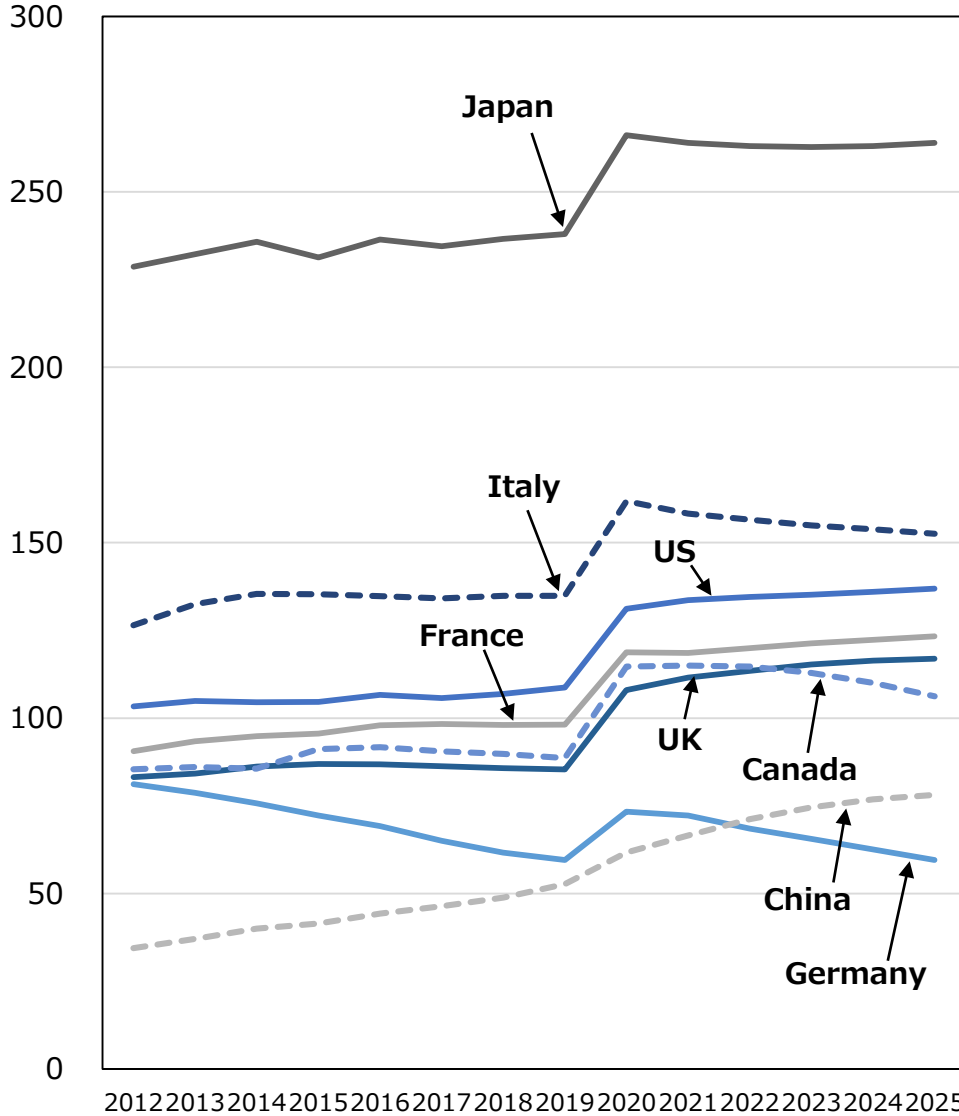
Financial assets and liabilities of non-financial corporations, % of GDP



Is this time different?

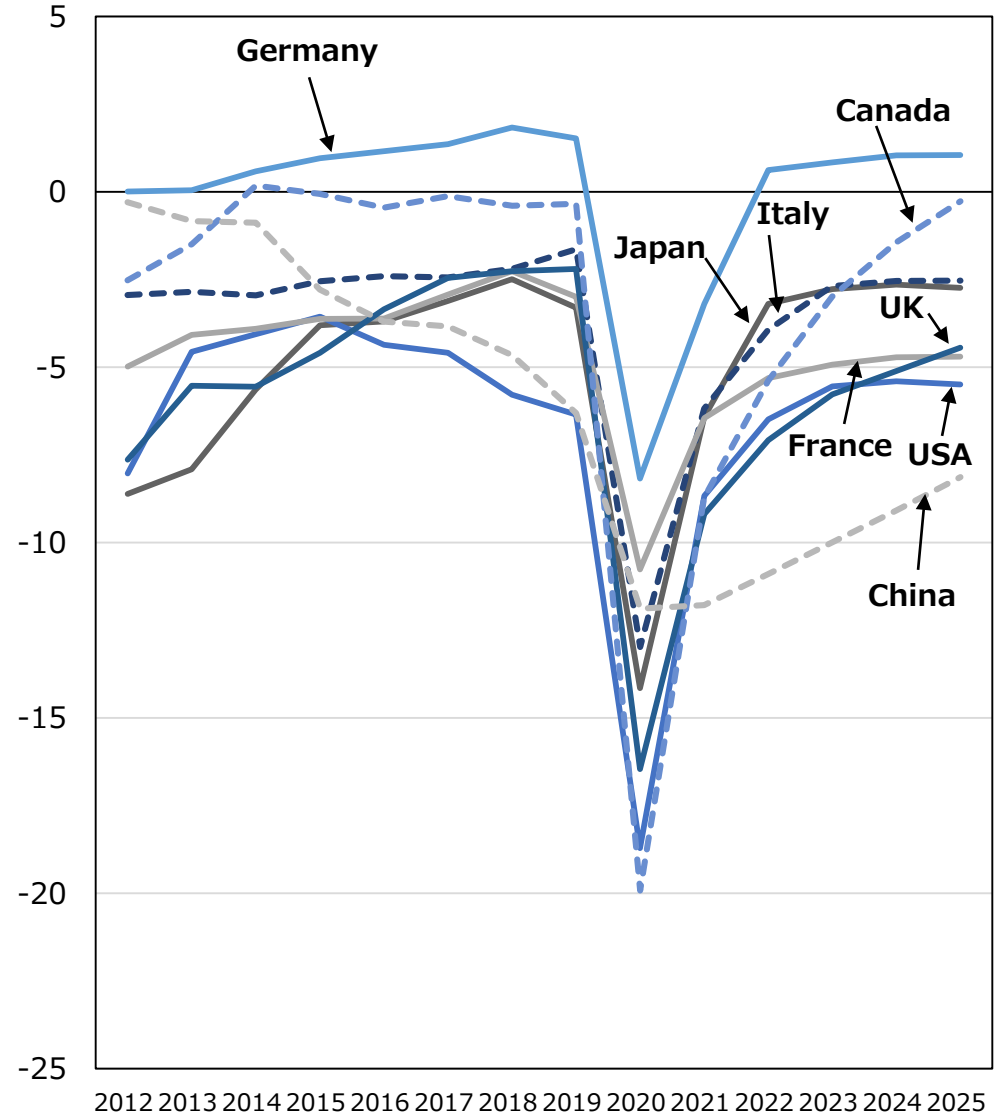
General government debt

(percent of GDP)



General Government Fiscal Balance

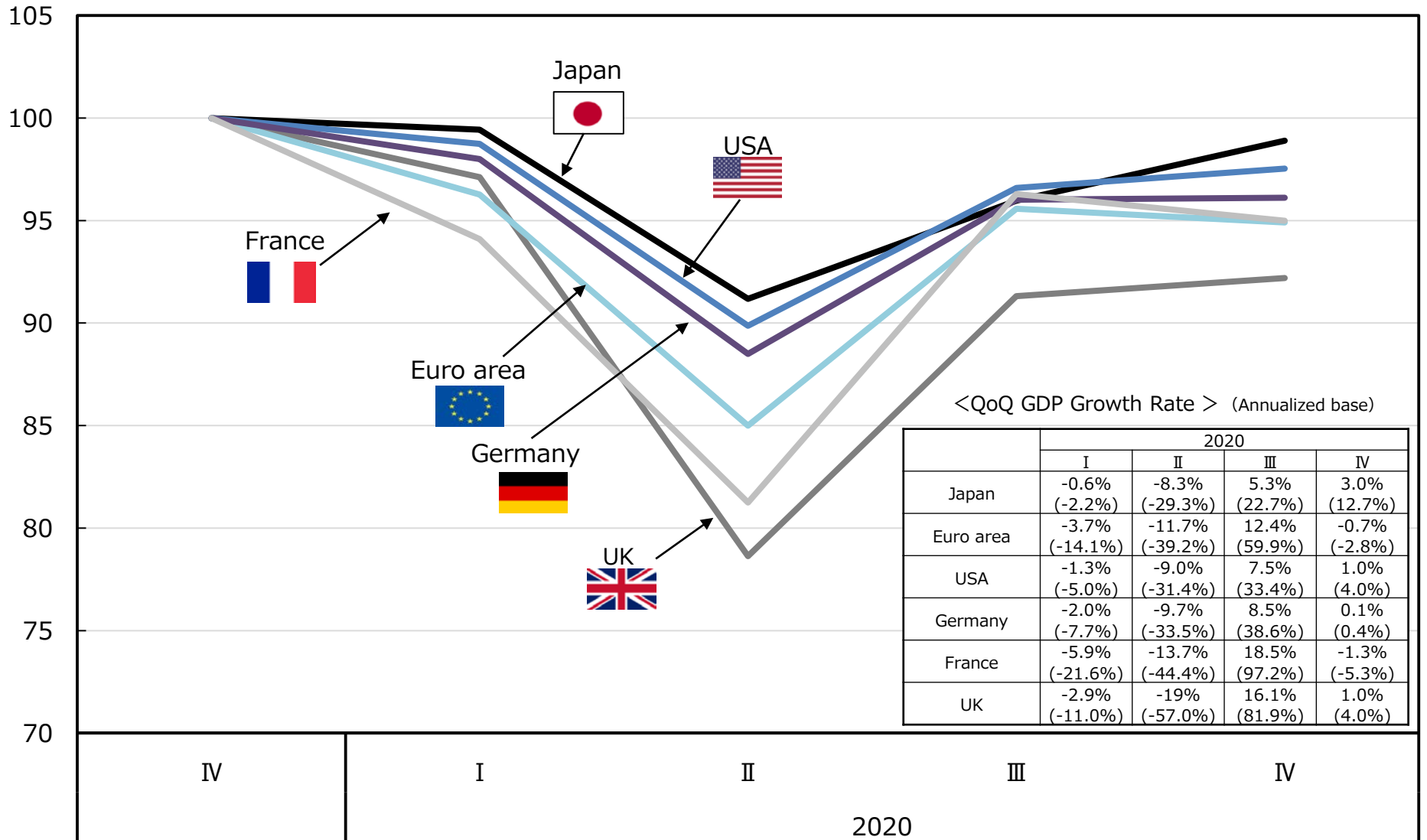
(percent of GDP)



Is this time different?

(2019IV = 100)

Quarterly real GDP, level, 2019 4Q=100



(CY)

(Sources) Cabinet Office, Japan Center for Economic Research (Japan), Department of Commerce (USA), Congressional Budget Office, Federal Statistical Office Germany, Institut national de la statistique et des etudes economiques (France), European Commission, Bank of England

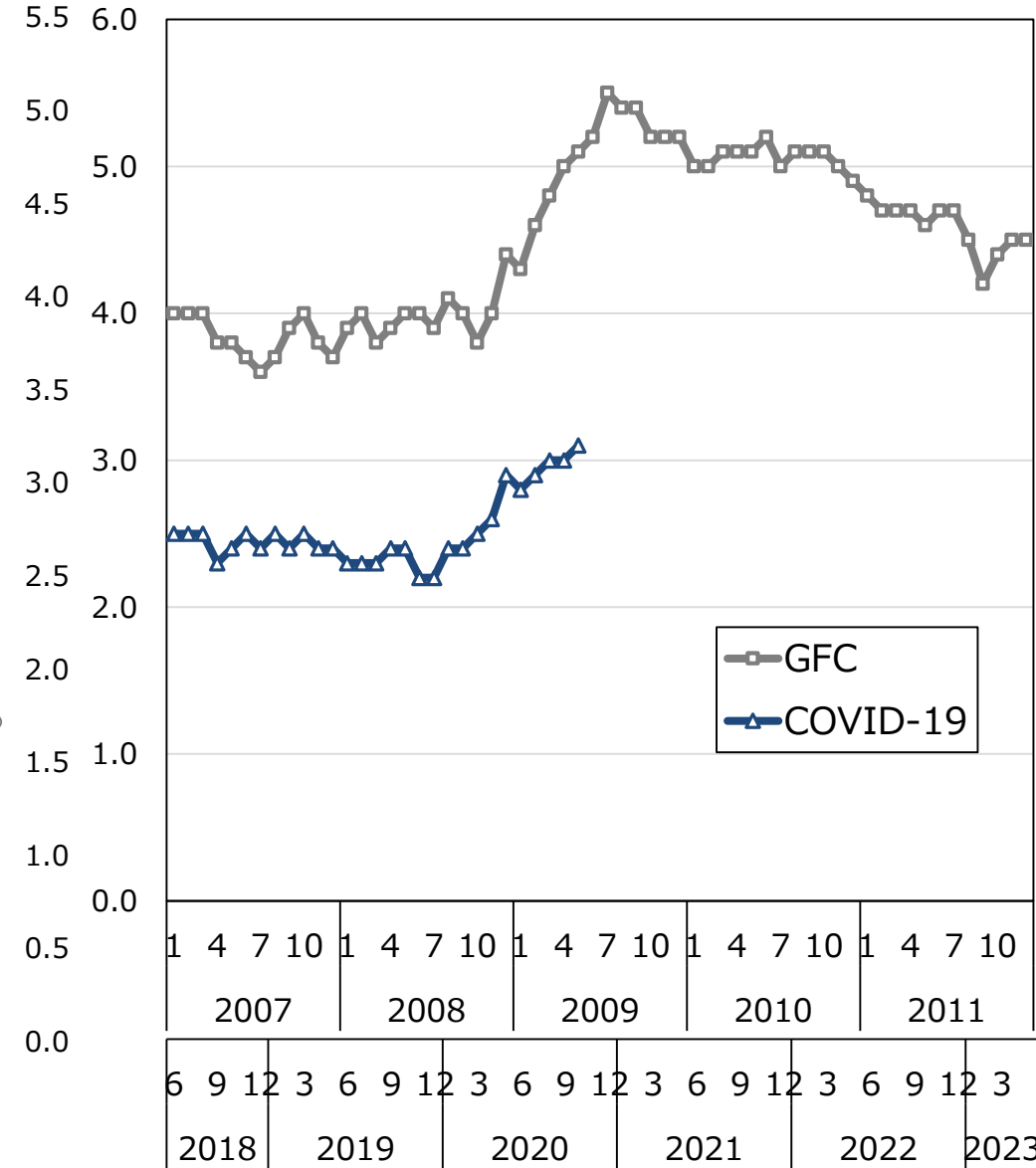
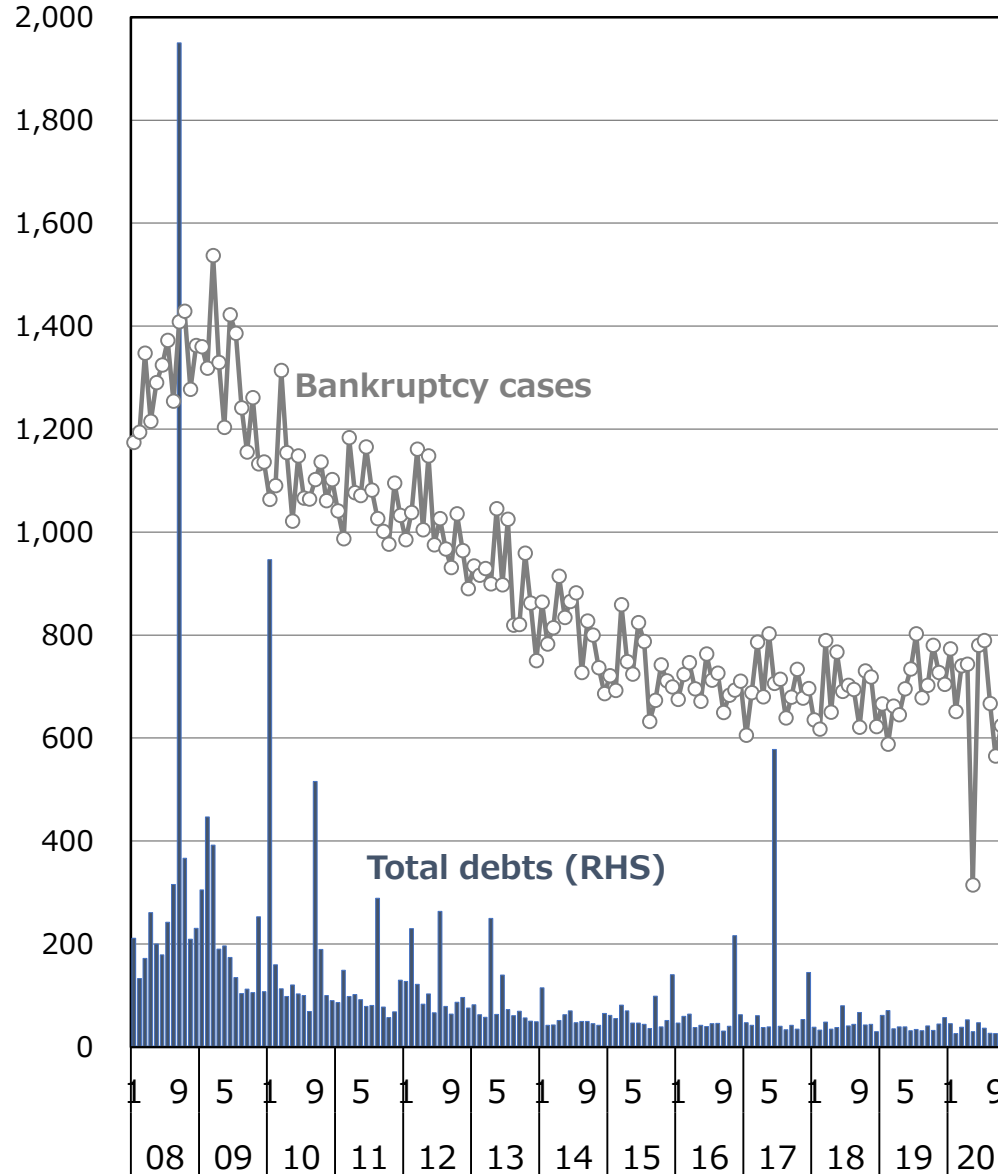
Bankruptcy Cases

Unemployment rate

(cases)

(trillion yen)

(%, SA)

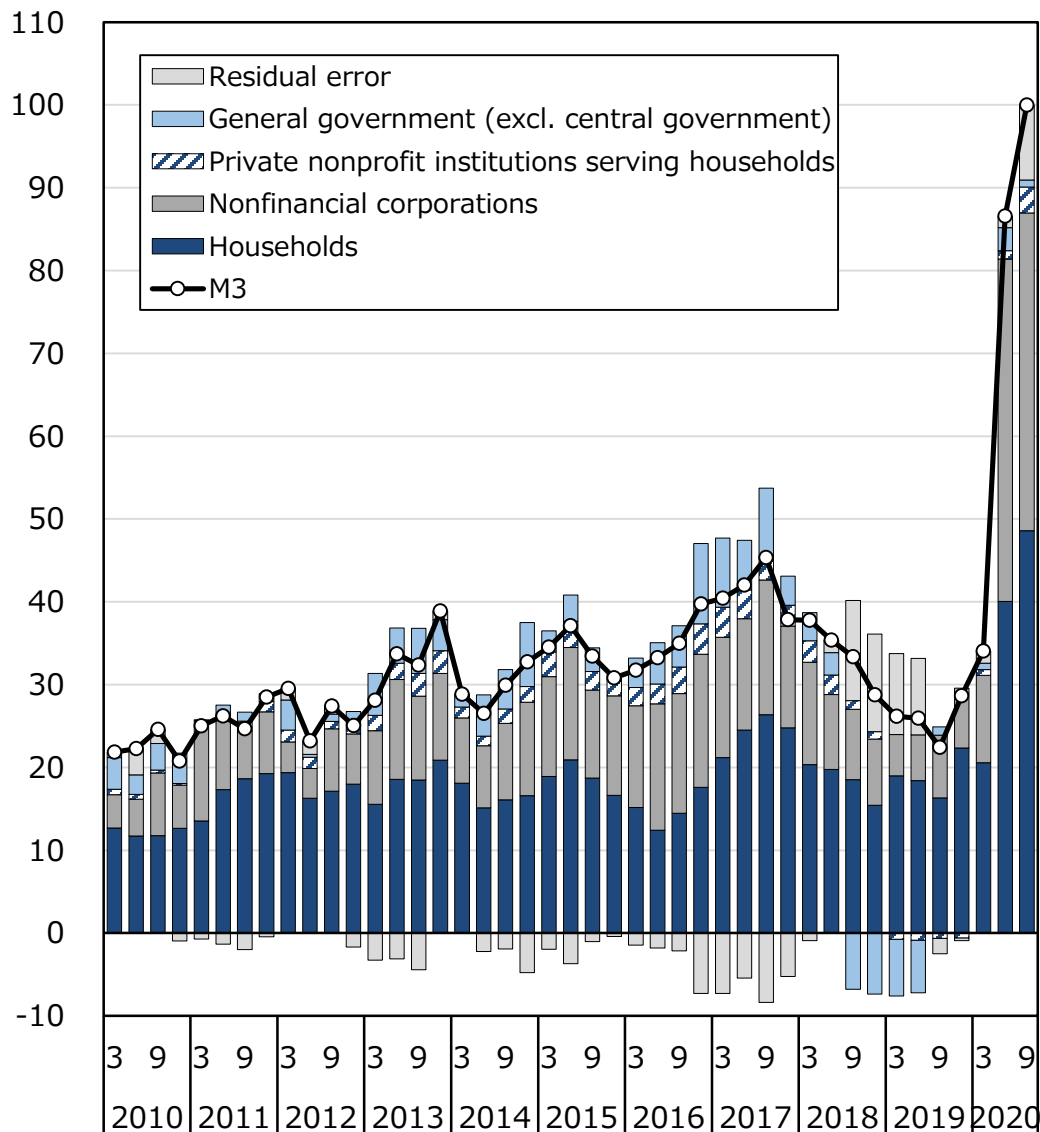


(source) Tokyo Shoko Research, Ministry of Internal Affairs and Communications

Cash and deposits, financial surplus / deficit by institutional sectors in Japan

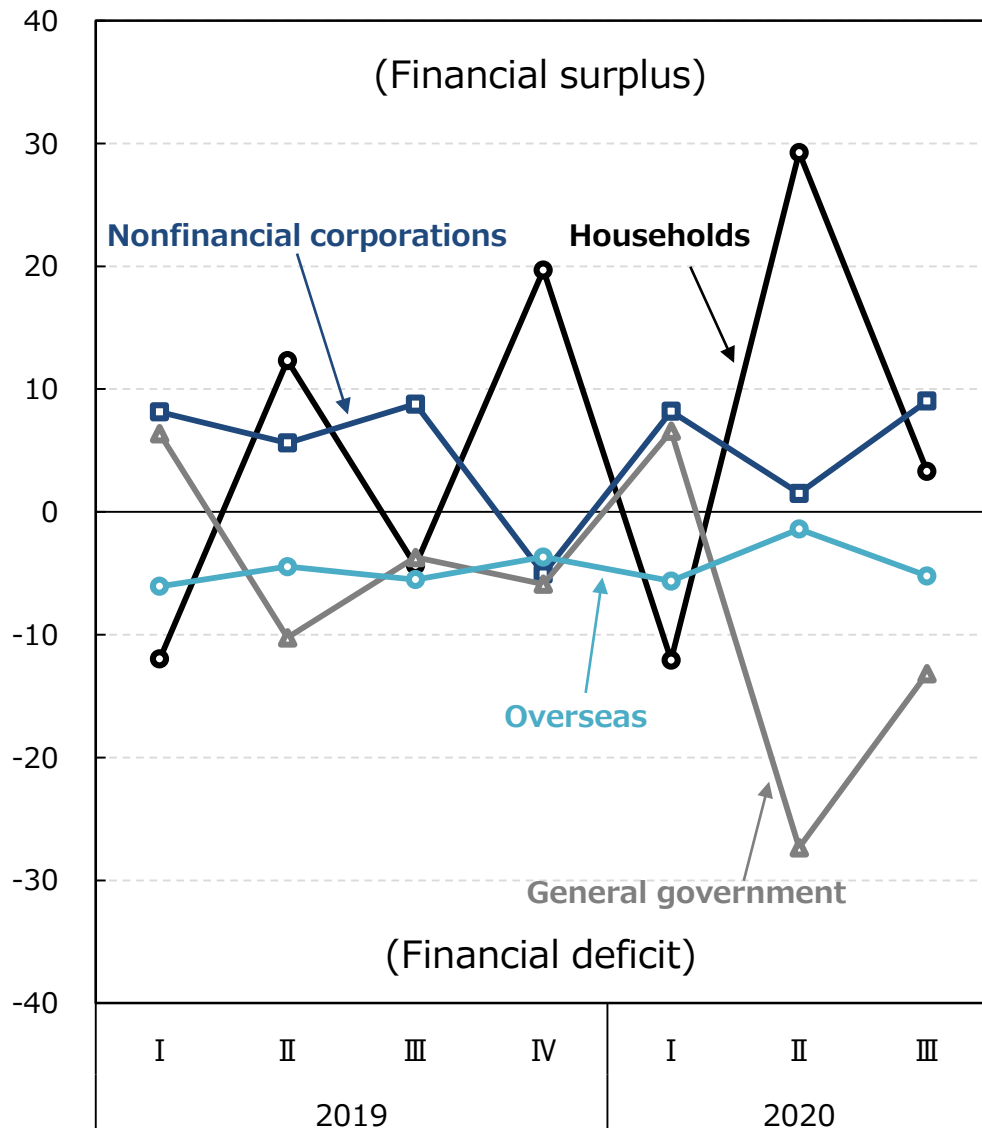
Cash and deposits by sectors

(YoY, trillion yen)



Financial surplus / deficit by sectors

(trillion yen)



(Source) Bank of Japan, Flow of Funds and Money Stock