

A comparison of the US GDP growth forecast results

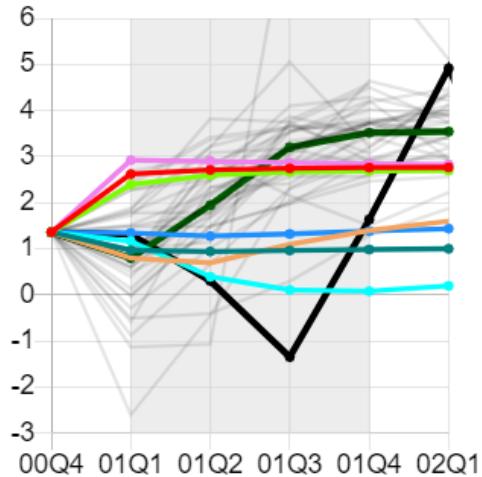
1. Comparison of forecasts in the 2001 recession (2001:I – 2001:IV)
 - a. Pre-crisis models
 - b. Post-crisis models
 - c. Structural models versus time-series models
2. Comparison of forecasts in the 2008/09 recession (2008:III – 2009:II)
 - a. Pre-crisis models
 - b. Post-crisis models
 - c. Structural models versus time-series models
3. Comparison of forecasts in the current recession (2020:I – 2020:II)
 - a. Pre-crisis models
 - b. Post-crisis models
 - c. Structural models versus time-series models
4. Comparison of forecasts from the original DNGS15 model and a modified DNGS15 model with less nominal rigidities
5. Comparison of forecasts from models estimated based on rolling-window and expanding-window specifications

- Comparison of forecasts in 2001:I – 2001:IV
- Pre-crisis models

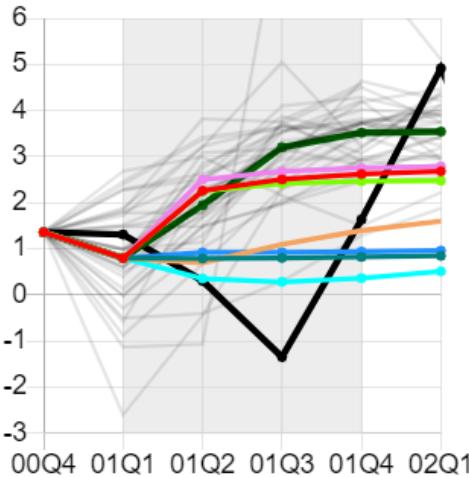
DS04 FRBEDO08 FU20 Fair GSW12 SW07 WW11 SPFIndividual SPFMean Actual

Forecast start 2001Q1

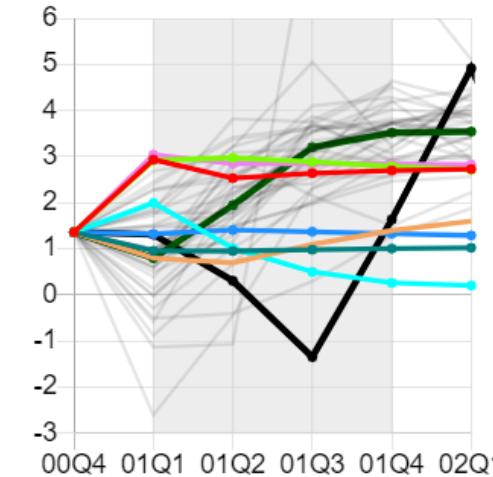
Balanced panel



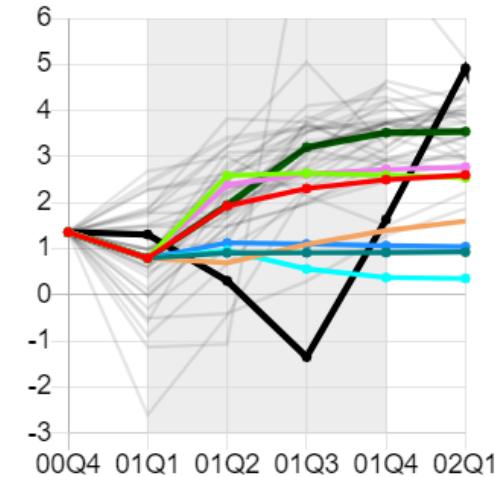
Conditioning on SPF nowcast



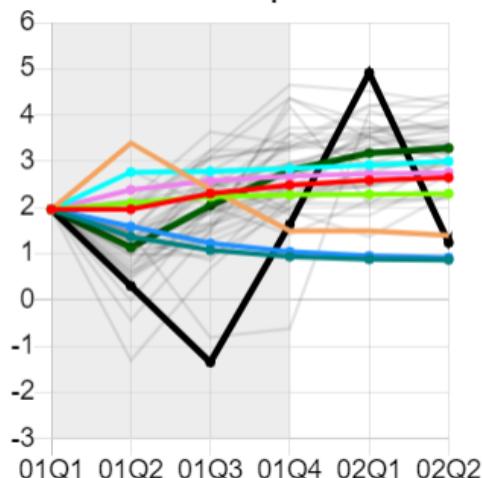
Conditioning on current-quarter observations



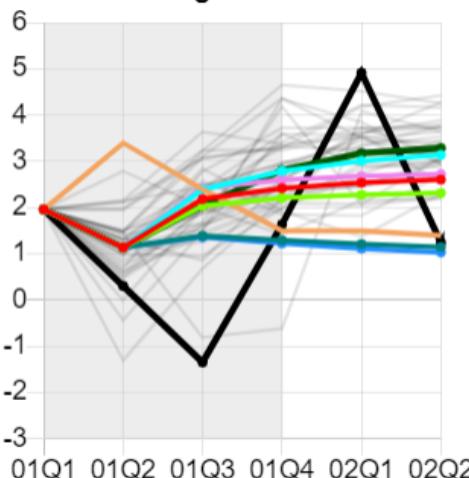
Full conditioning



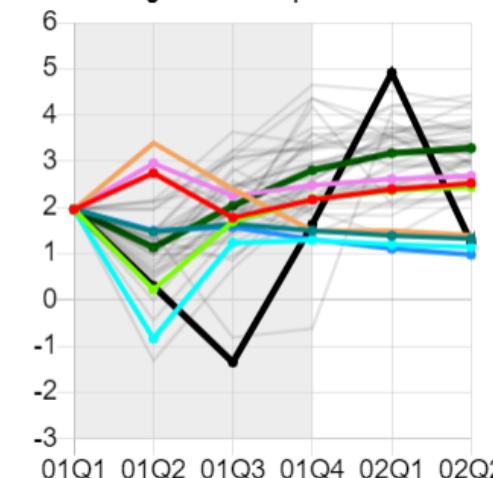
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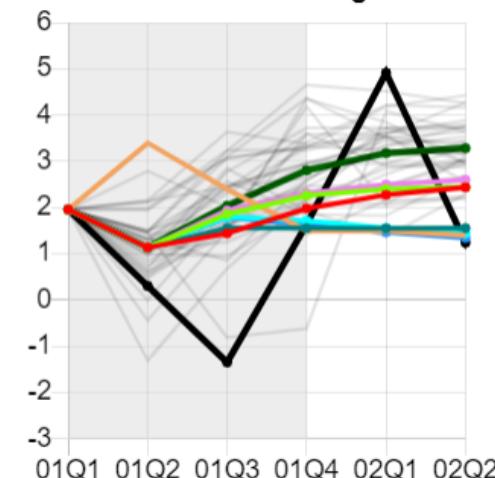
Conditioning on SPF nowcast



Conditioning on current-quarter observations



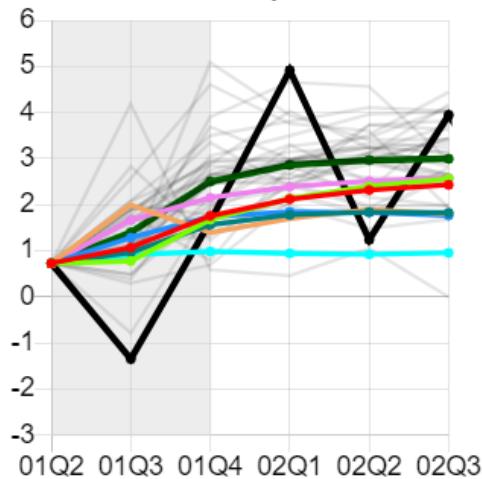
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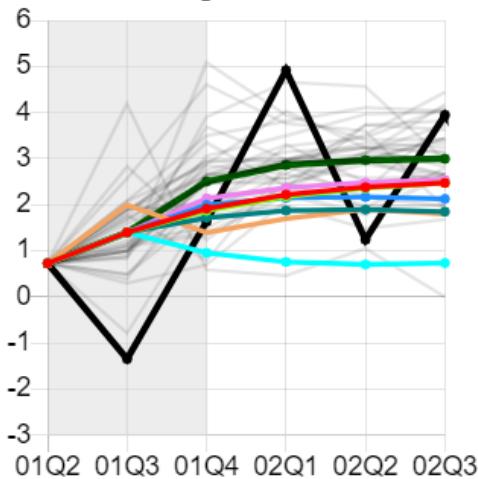
DS04 FRBEDO08 FU20 Fair GSW12 SW07 WW11 SPFIndividual SPFMean Actual

Forecast start 2001Q3

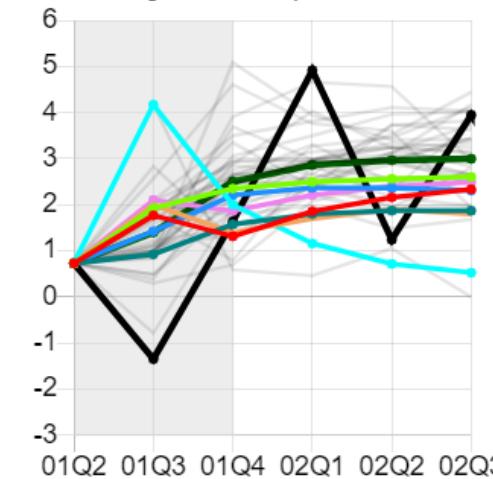
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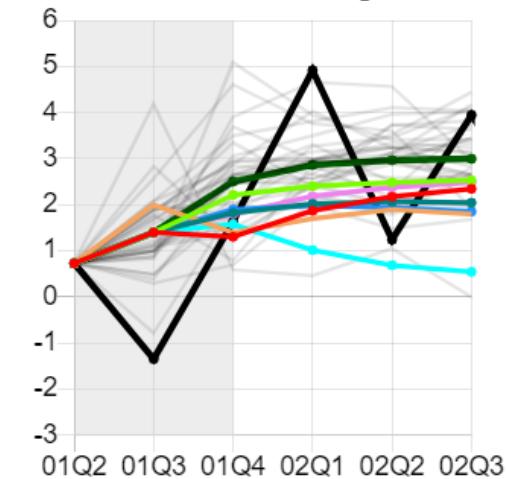
Conditioning on SPF nowcast



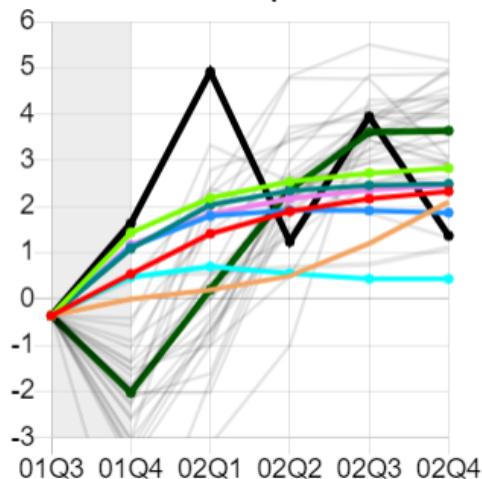
Conditioning on current-quarter observations



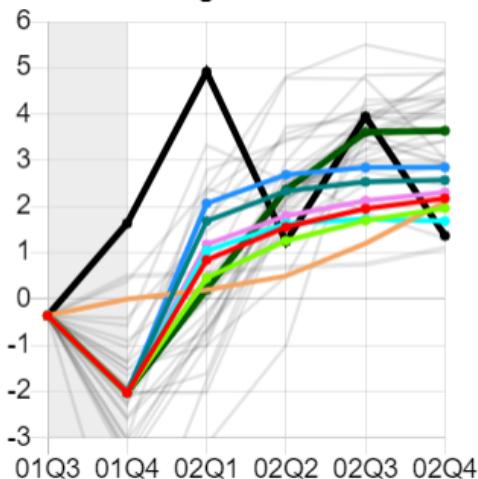
Full conditioning



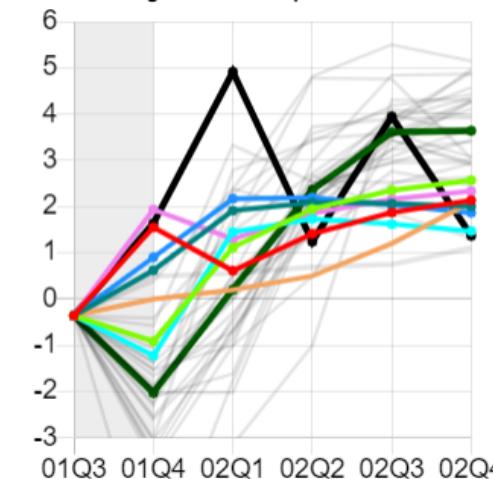
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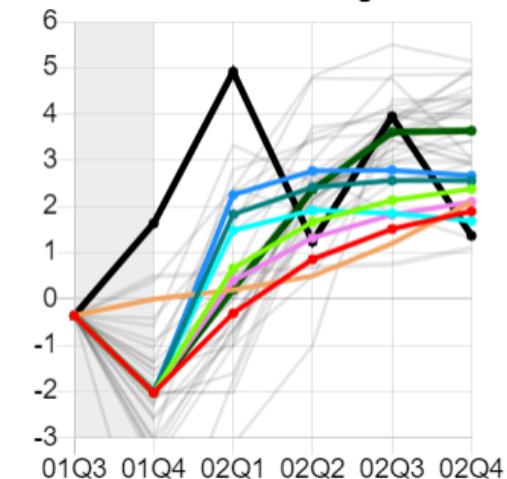
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning

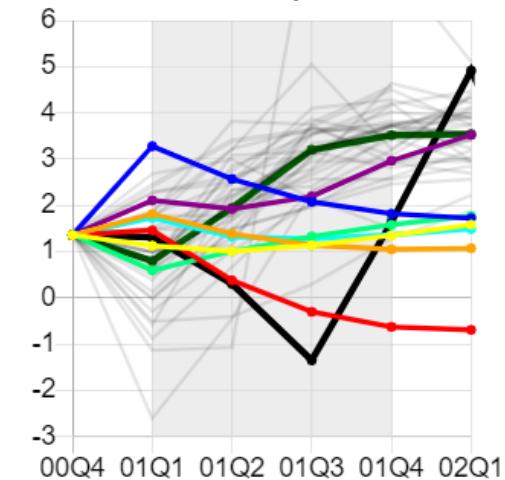


- Comparison of forecasts in 2001:I – 2001:IV
- Post-crisis models

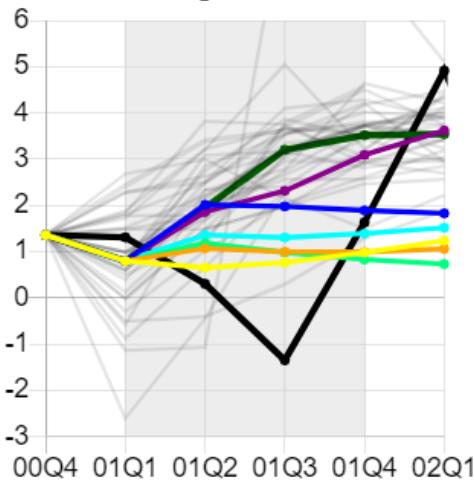
CMR14 DNGS15 IN10 KR15_FF KR15_HH NKBGG QPM08 SPFIndividual SPFMean Actual

Forecast start 2001Q1

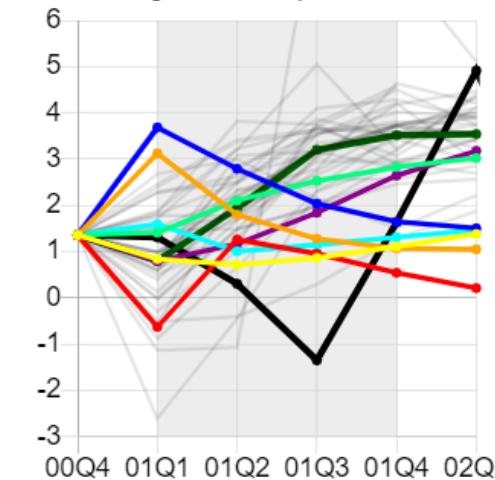
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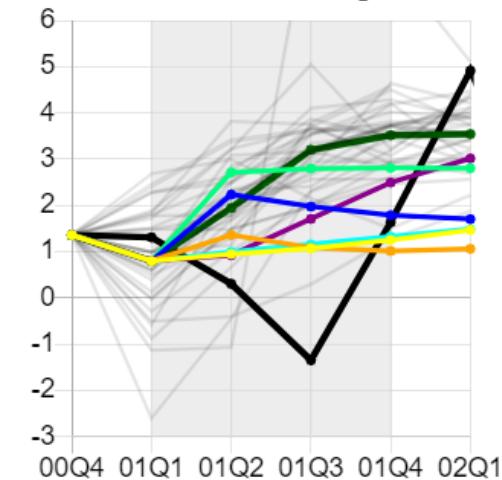
Conditioning on SPF nowcast



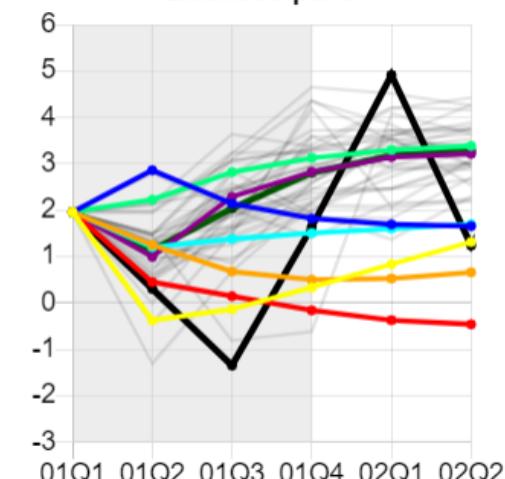
Conditioning on current-quarter observations



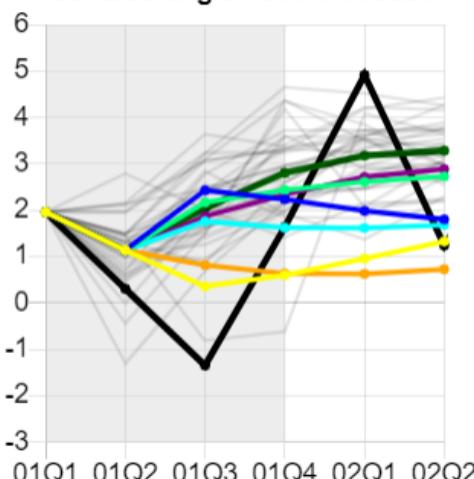
Full conditioning



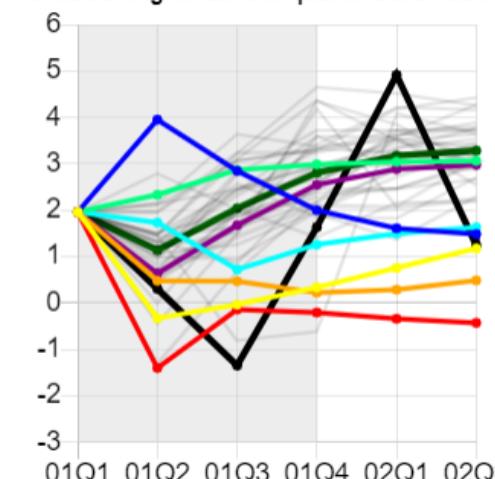
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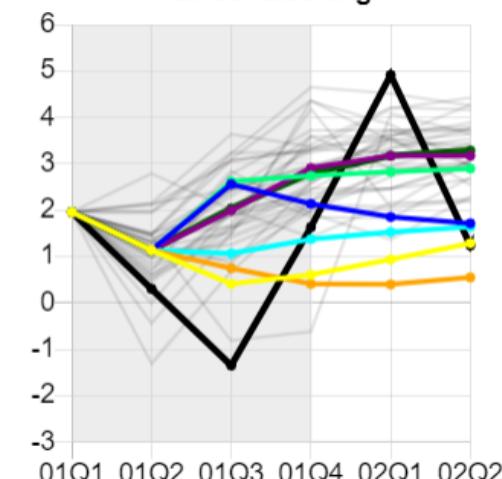
Conditioning on SPF nowcast



Conditioning on current-quarter observations



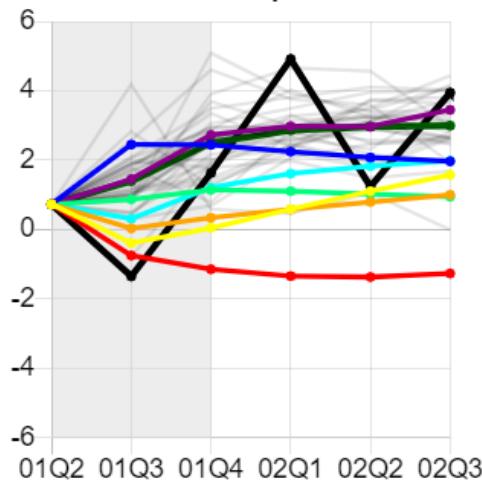
Full conditioning



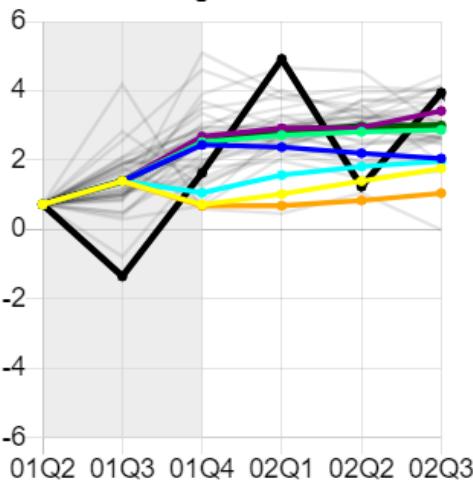
CMR14 DNGS15 IN10 KR15_FF KR15_HH NKBGG QPM08 SPFIndividual SPFMean Actual

Forecast start 2001Q3

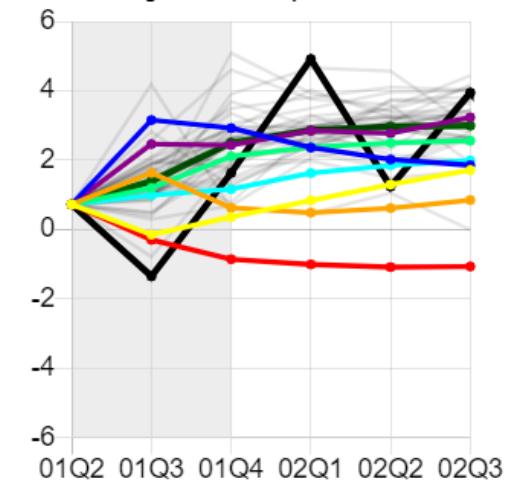
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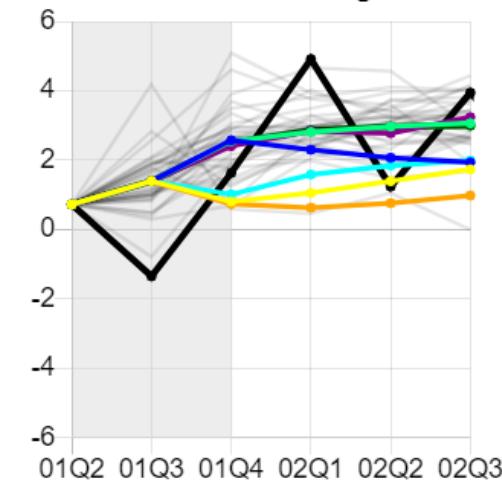
Conditioning on SPF nowcast



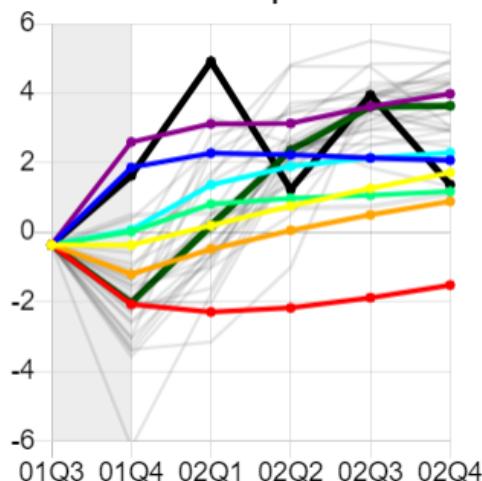
Conditioning on current-quarter observations



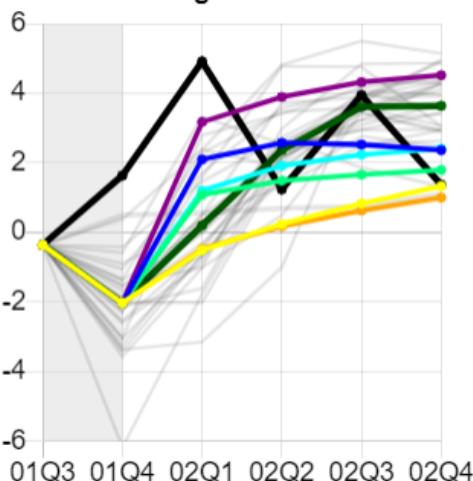
Full conditioning



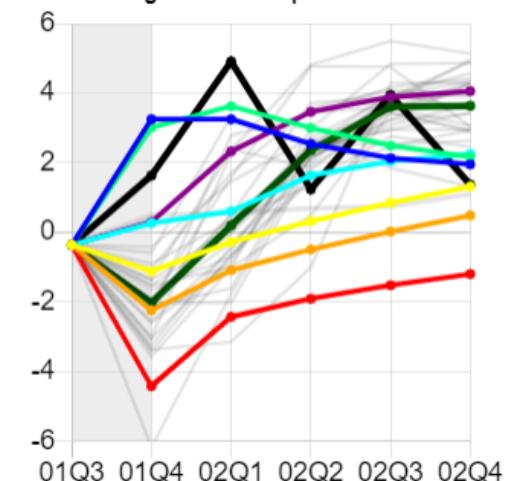
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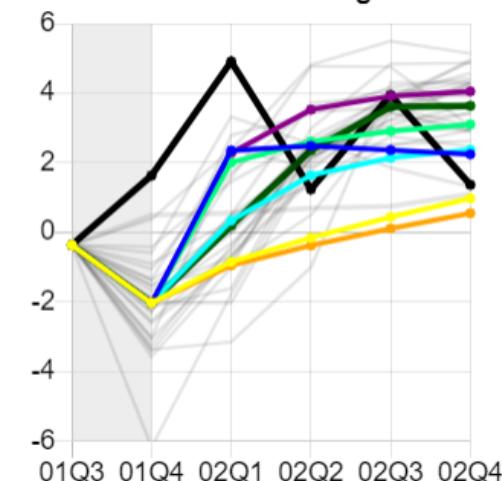
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning

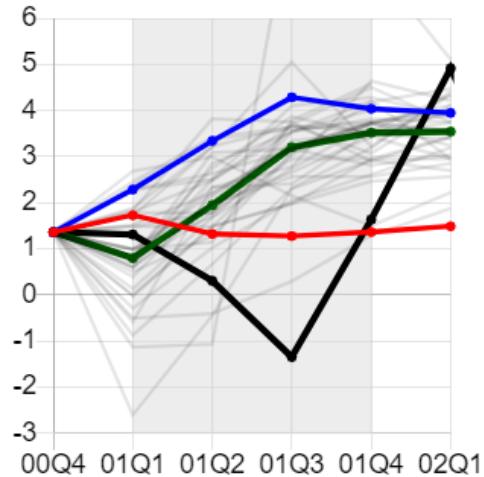


- Comparison of forecasts in 2001:I – 2001:IV
- Structural models versus time-series models

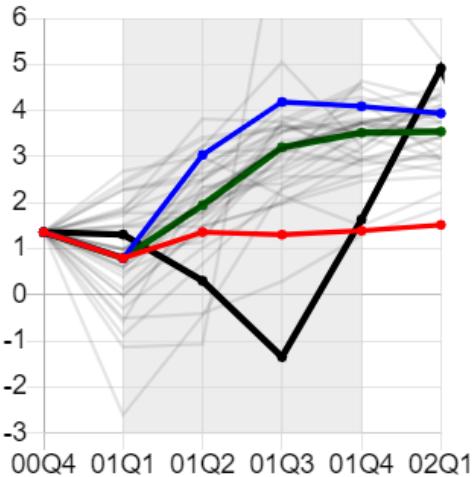
■ NKBGG ■ GLP5v ■ SPFIndividual ■ SPFMean ■ Actual

Forecast start 2001Q1

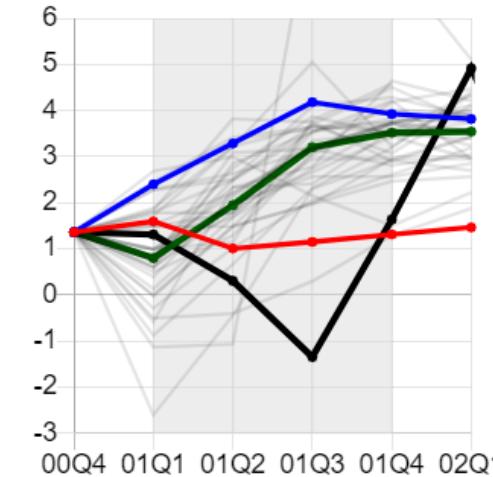
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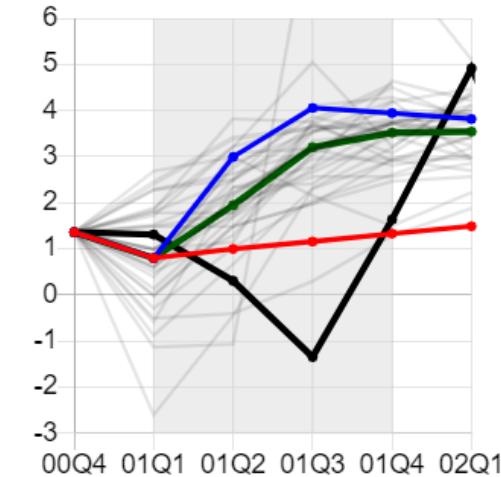
Conditioning on SPF nowcast



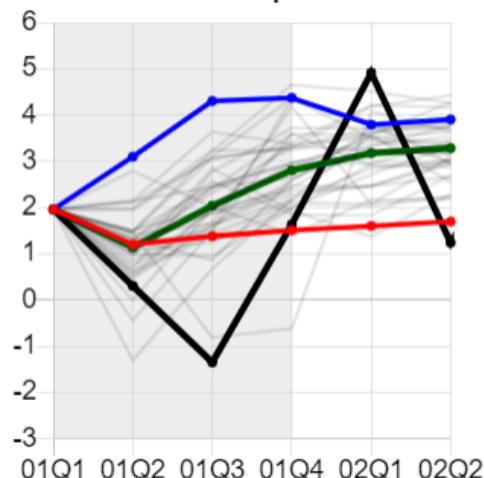
Conditioning on current-quarter observations



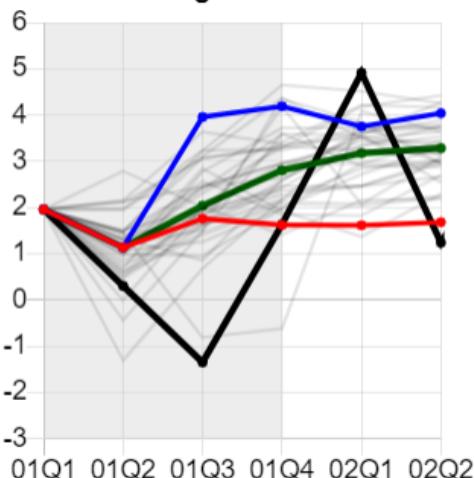
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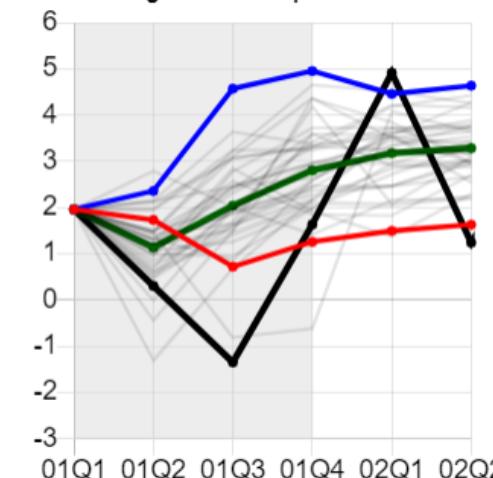
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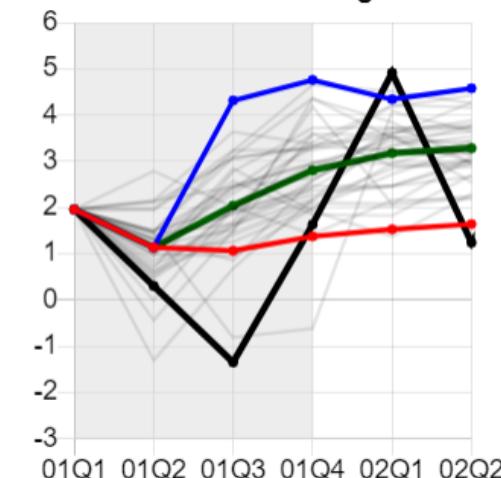
Conditioning on SPF nowcast



Conditioning on current-quarter observations



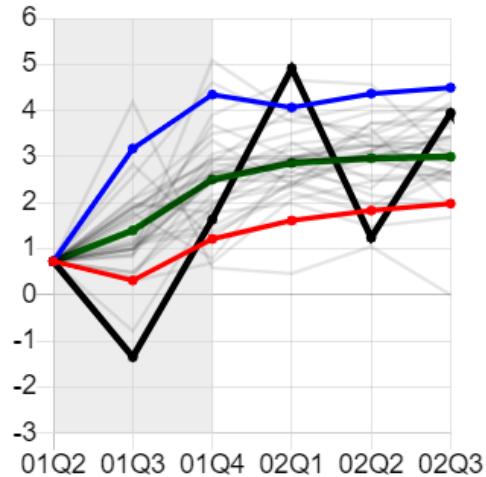
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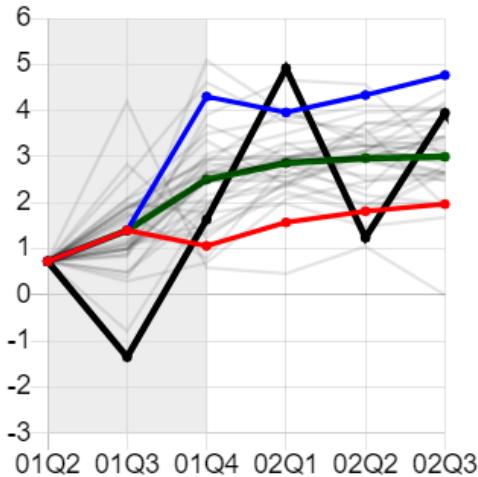
NKBGG GLP5v SPFIndividual SPFMean Actual

Forecast start 2001Q3

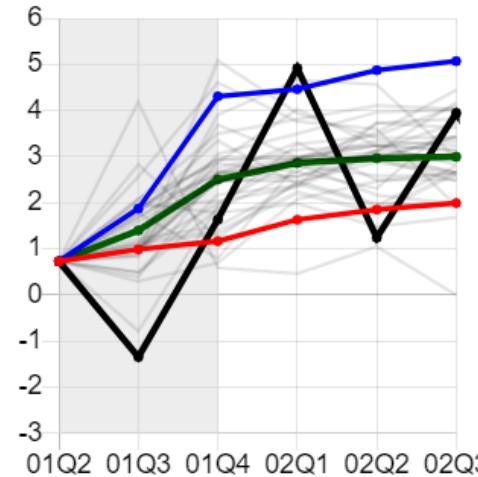
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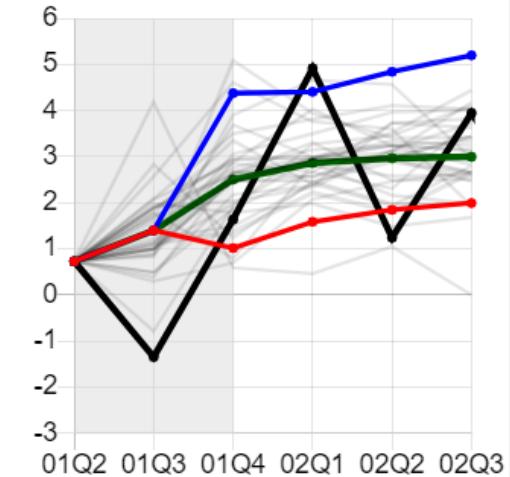
Conditioning on SPF nowcast



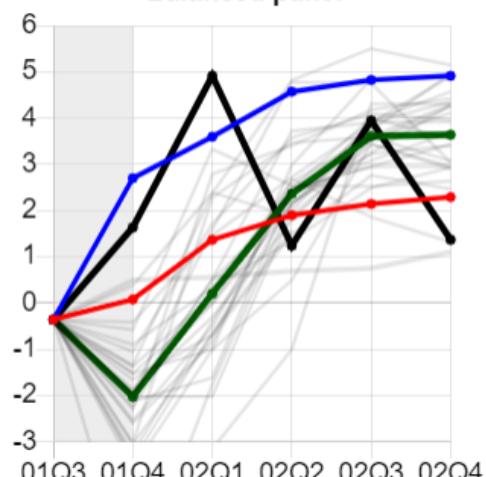
Conditioning on current-quarter observations



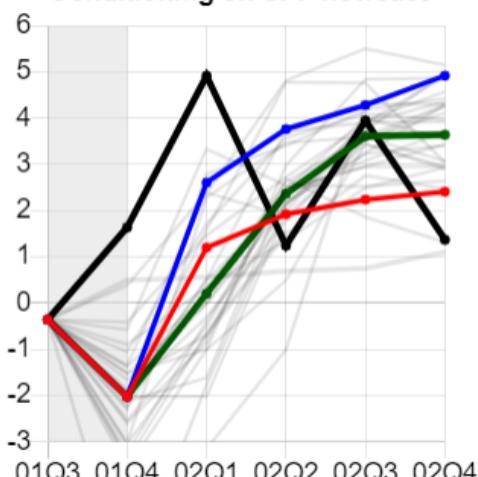
Full conditioning



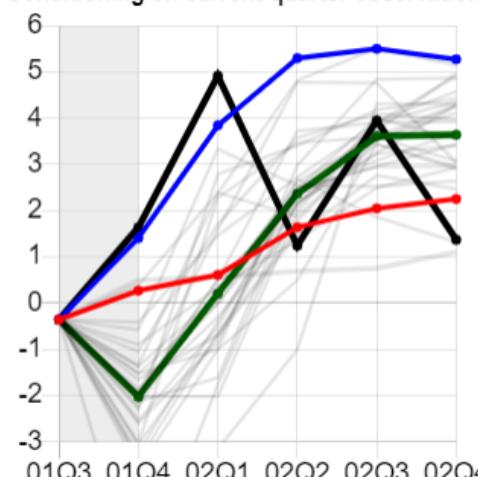
Balanced panel



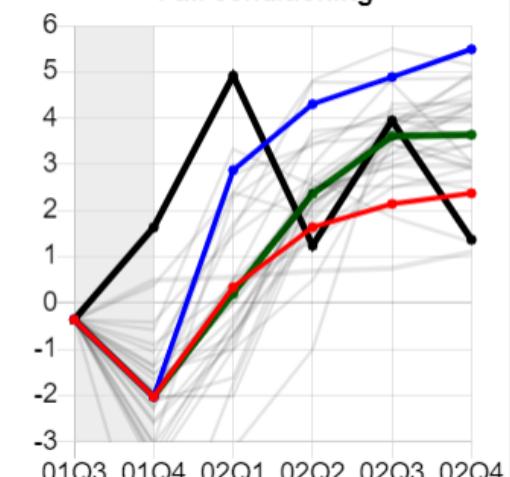
Conditioning on SPF nowcast



Conditioning on current-quarter observations



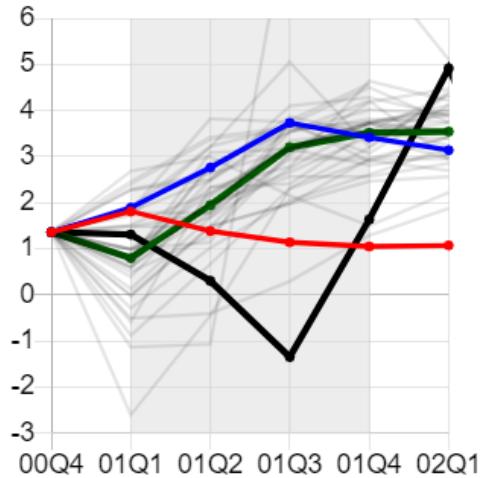
Full conditioning



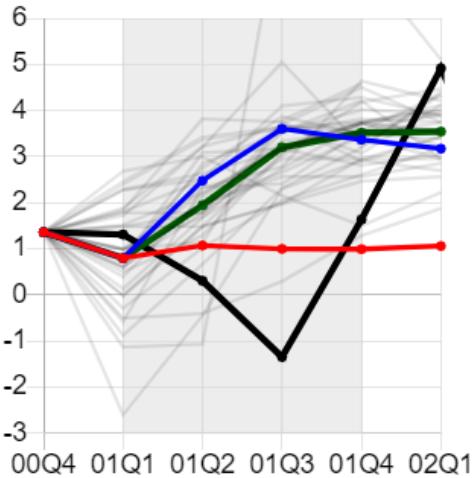
DNGS15 GLP8v SPFIndividual SPFMean Actual

Forecast start 2001Q1

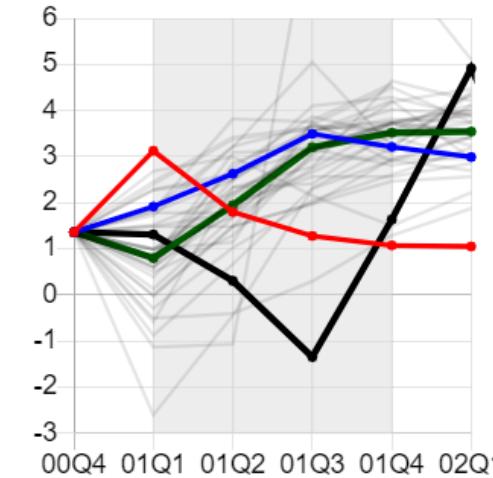
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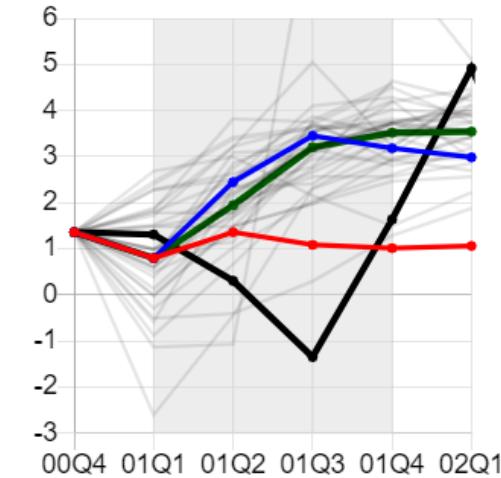
Conditioning on SPF nowcast



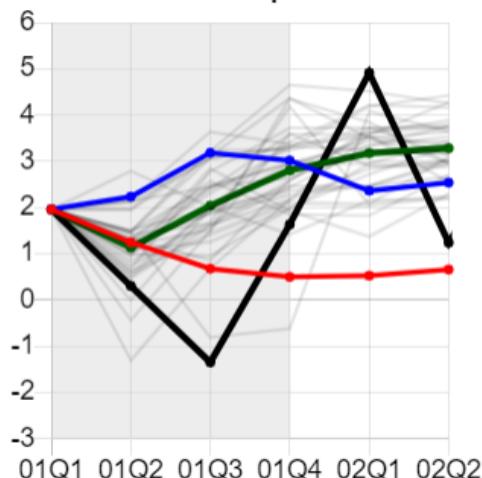
Conditioning on current-quarter observations



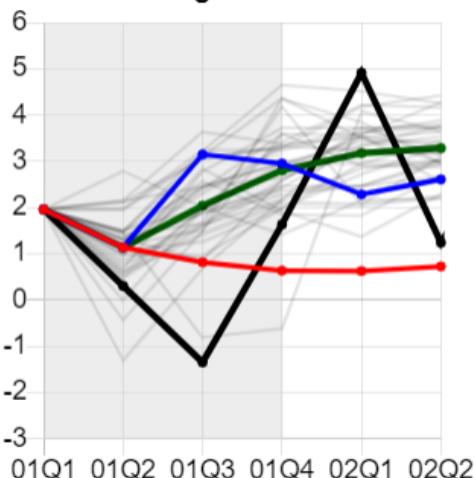
Full conditioning



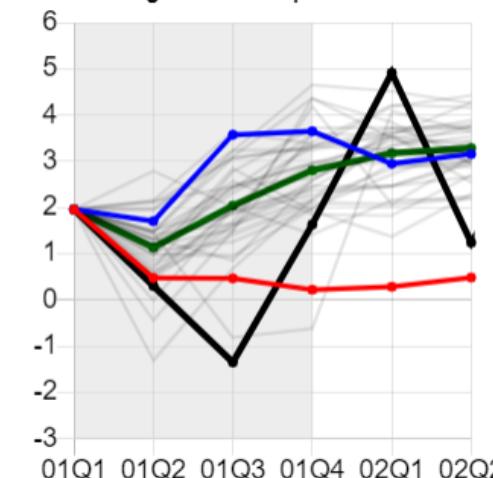
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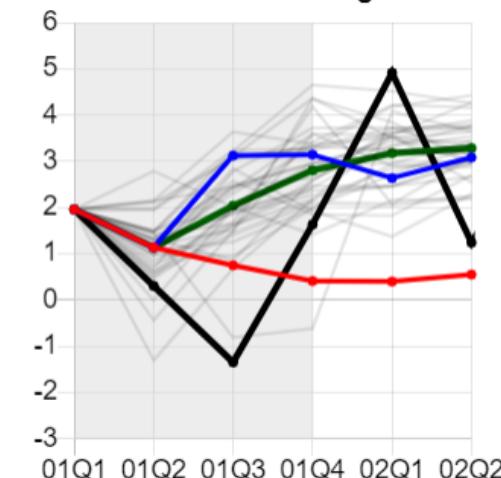
Conditioning on SPF nowcast



Conditioning on current-quarter observations



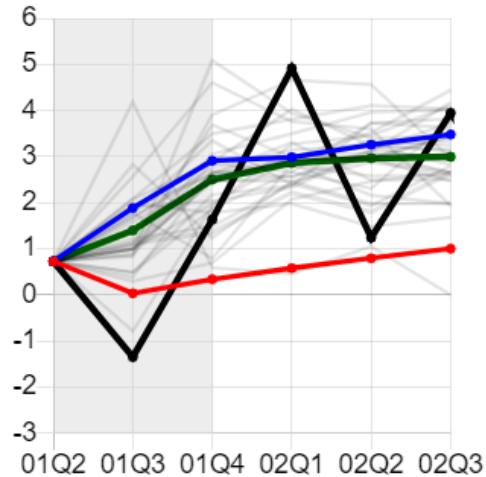
Full conditioning



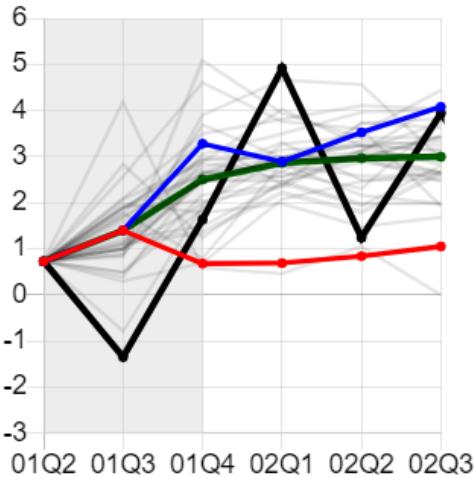
DNGS15 GLP8v SPFIndividual SPFMean Actual

Forecast start 2001Q3

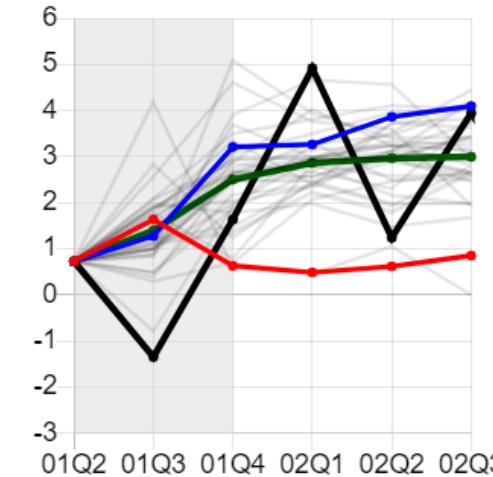
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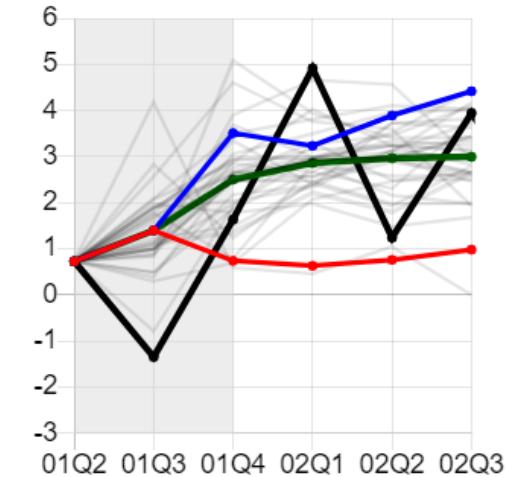
Conditioning on SPF nowcast



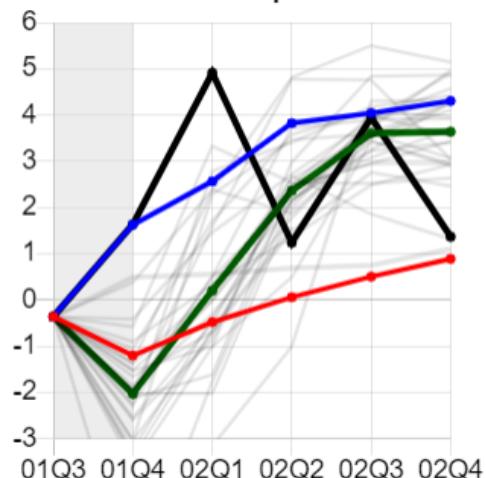
Conditioning on current-quarter observations



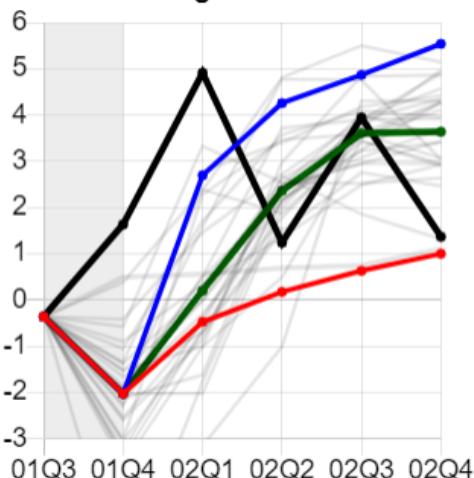
Full conditioning



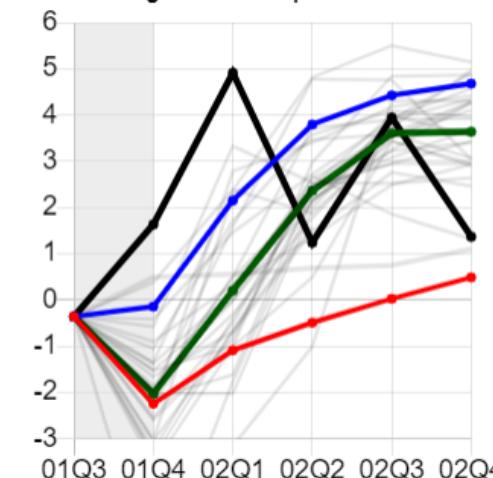
Balanced panel



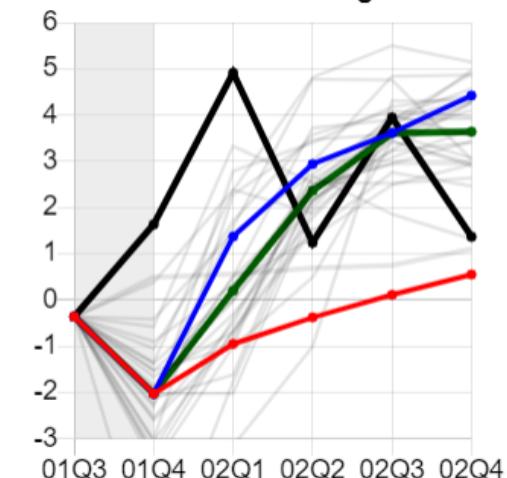
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning



- **Comparison of relative* RMSEs in 2001:I – 2001:IV**

* RMSEs are reported relative to those of the RMSE of the mean SPF forecast, for which absolute RMSEs are reported in the last column.

Source	SW07				DS04				WW11				FU20				GSW12				FRBEDO08				Fair	
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC														
Horizon	0	0.64		0.66		0.72		0.91		0.86		1.00		0.56		0.59		0.76		1.36		0.64		0.95		1.04
	1	0.68	0.66	0.69	0.69	0.92	0.94	0.95	1.01	0.93	0.95	0.94	0.98	0.63	0.70	0.70	0.70	0.97	0.89	0.72	0.77	0.83	0.97	0.92	0.96	0.99
	2	0.79	0.74	0.74	0.78	0.97	0.91	0.96	0.91	0.97	0.93	0.97	0.93	0.78	0.74	0.76	0.74	0.85	0.88	0.81	0.84	0.97	0.89	0.94	0.91	0.78
	3	1.45	1.33	1.42	1.20	1.07	1.11	1.14	1.22	1.04	1.07	1.08	1.15	1.41	1.32	1.32	1.22	1.40	1.04	1.49	1.35	1.06	1.20	1.12	1.12	1.43
	4	1.19	1.32	1.15	1.32	0.90	0.89	0.89	0.89	0.89	0.89	0.88	0.87	1.32	1.36	1.28	1.32	1.70	1.66	1.67	1.64	0.91	0.89	0.89	0.91	1.16

Source	NKBGG				QPM08				DNGS15				CMR14				KR15_FF				KR15_HH					
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC		
Horizon	0	0.53		0.66		0.67		0.87		0.71		1.11		0.50		0.66		0.71		1.38		0.71		0.76		
	1	0.76	0.82	0.80	0.86	0.74	0.67	0.68	0.72	0.99	0.97	1.07	1.05	0.85	0.95	0.91	1.00	0.99	1.21	1.10	1.21	1.00	1.21	0.71	1.21	
	2	0.81	0.82	0.79	0.80	0.88	0.95	0.86	0.86	1.00	0.96	1.07	1.02	0.99	0.89	0.93	0.93	0.91	0.83	0.98	0.86	0.88	0.67	0.99	0.93	
	3	1.23	1.21	1.28	1.25	0.91	1.02	0.88	0.80	1.81	1.76	1.97	1.92	1.57	1.63	1.68	1.71	1.19	1.04	1.11	1.07	1.12	1.24	0.83	1.03	
	4	1.17	1.17	1.17	1.17	1.03	1.10	1.07	1.11	1.41	1.40	1.46	1.43	1.18	1.23	1.20	1.18	1.07	1.08	1.12	1.10	1.41	1.28	0.95	0.92	

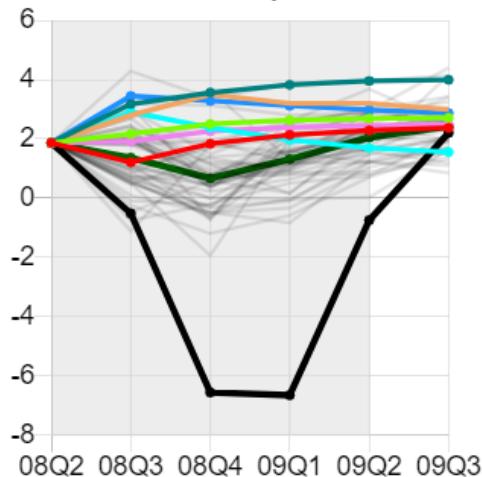
Source	IN10				VI16_BGG				VI16_GK				3vBVAR				5vBVAR				8vBVAR				SPF	
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	Mean	
Horizon	0	0.80		1.42		1.28		1.36		1.41		1.46		1.43		1.16		1.18		0.85		0.81		0.75		2.34
	1	1.29		1.30		1.60	1.27	1.62	1.27	1.67	1.31	1.68	1.33	1.12	1.08	1.19	1.14	1.16	1.14	1.19	1.17	0.95	0.94	1.03	1.05	3.05
	2	1.41		1.40		1.84	1.43	1.87	1.45	1.91	1.46	1.92	1.50	1.31	1.27	1.42	1.31	1.36	1.27	1.45	1.33	1.18	1.20	1.16	1.06	2.62
	3	2.76		2.58		3.58	3.14	3.67	3.20	3.68	3.16	3.72	3.28	1.38	1.32	1.50	1.39	1.35	1.33	1.48	1.42	1.19	1.29	1.18	1.23	1.55
	4	2.40		2.16		3.18	2.88	3.23	2.93	3.21	2.90	3.23	2.96	1.34	1.41	1.61	1.55	1.31	1.35	1.55	1.60	1.06	1.36	1.23	1.17	1.74

- Comparison of forecasts in 2008:III – 2009:II
- Pre-crisis models

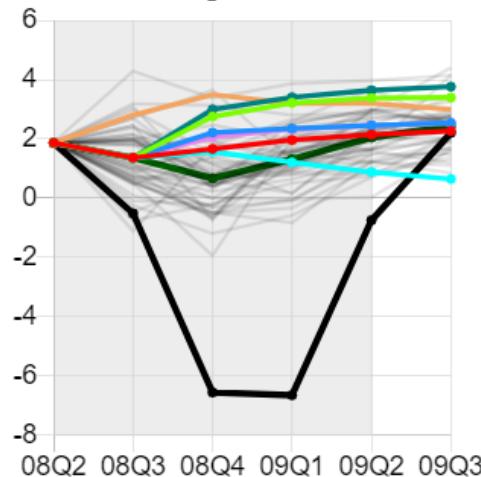
DS04 FRBEDO08 FU20 Fair GSW12 SW07 WW11 SPFIndividual SPFMean Actual

Forecast start 2008Q3

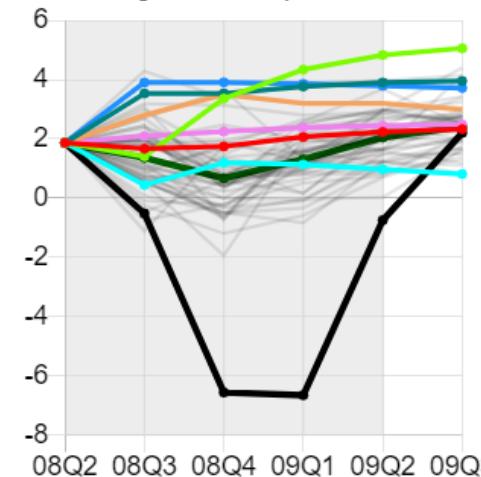
Balanced panel



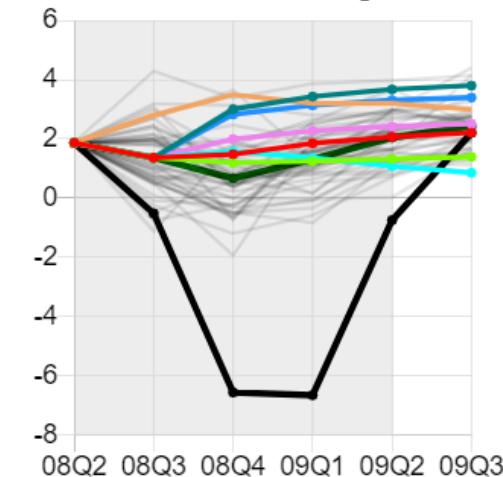
Conditioning on SPF nowcast



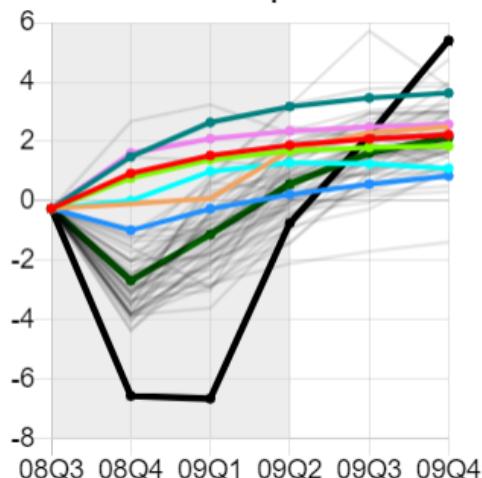
Conditioning on current-quarter observations



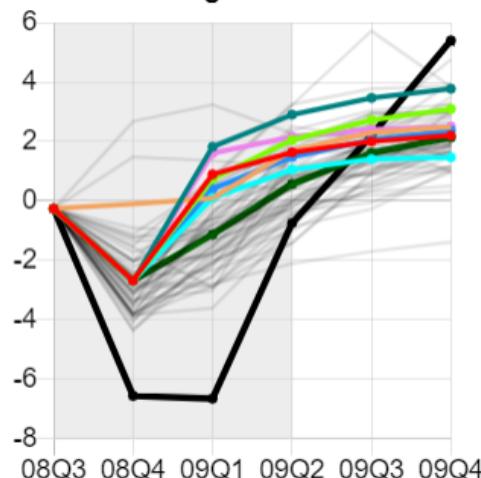
Full conditioning



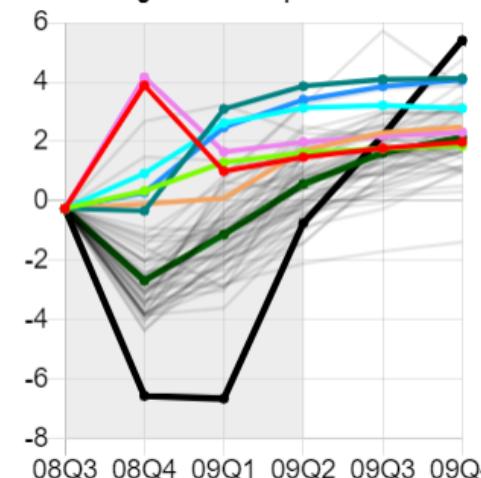
Balanced panel



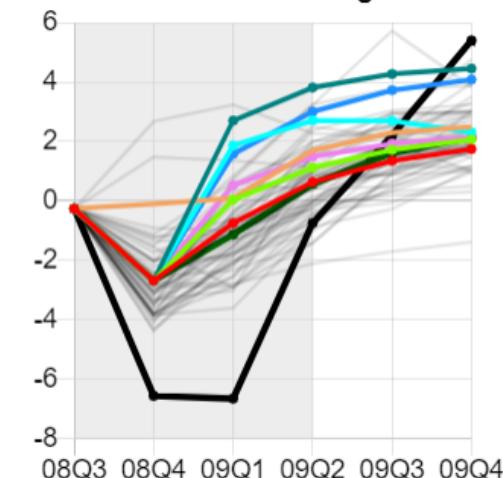
Conditioning on SPF nowcast



Conditioning on current-quarter observations



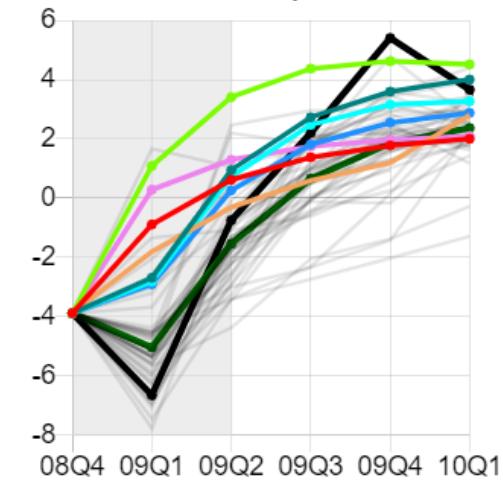
Full conditioning



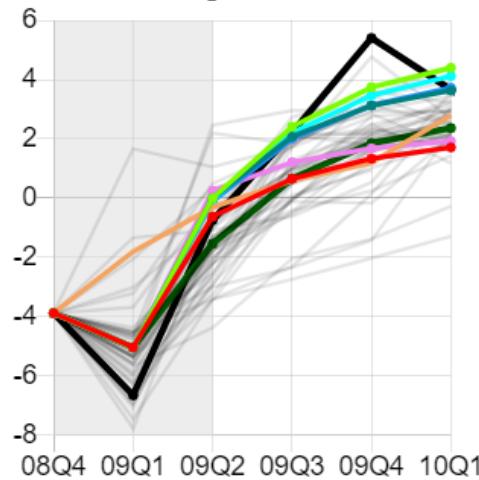
DS04 FRBEDO08 FU20 Fair GSW12 SW07 WW11 SPFIndividual SPFMean Actual

Forecast start 2009Q1

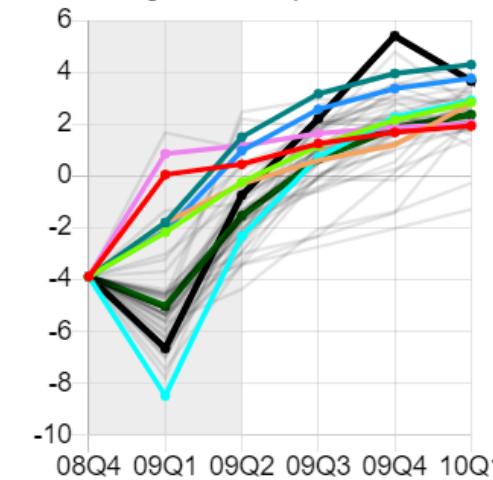
Balanced panel



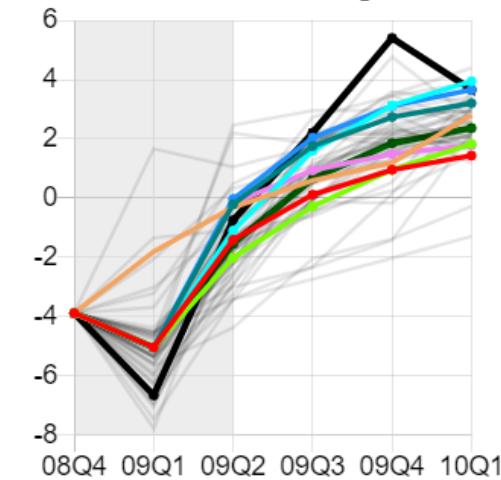
Conditioning on SPF nowcast



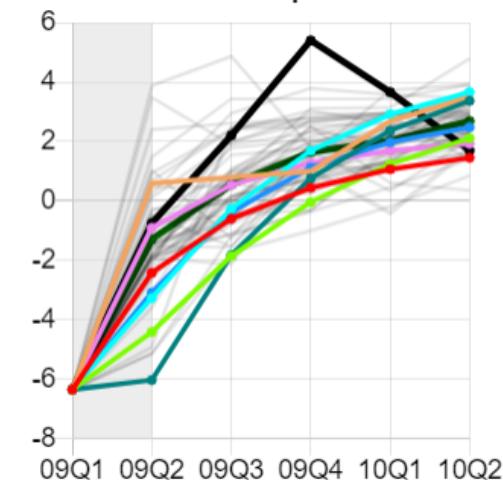
Conditioning on current-quarter observations



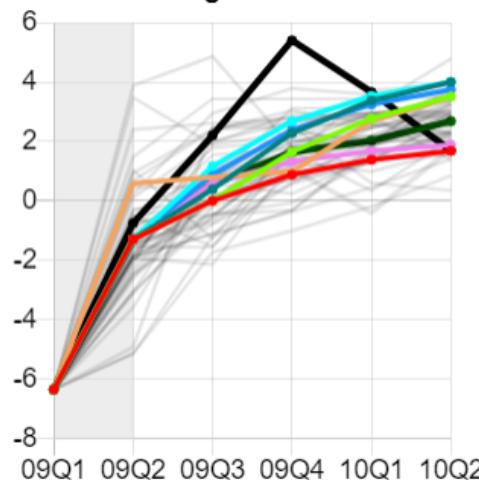
Full conditioning



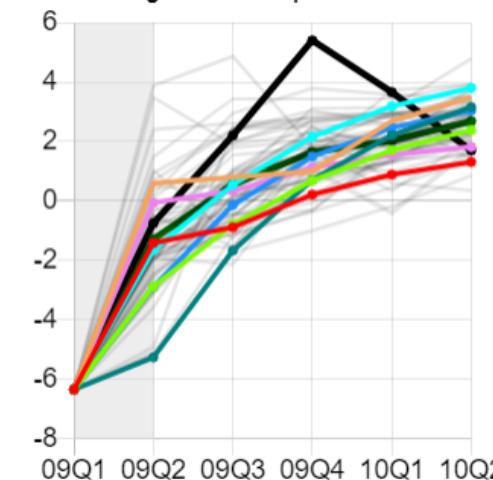
Balanced panel



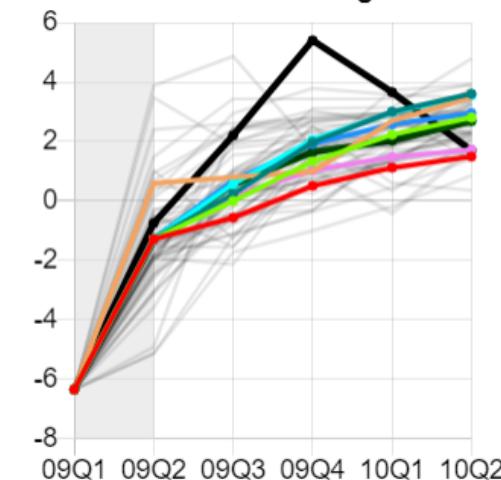
Conditioning on SPF nowcast



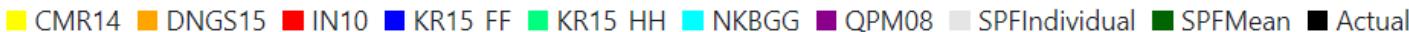
Conditioning on current-quarter observations



Full conditioning

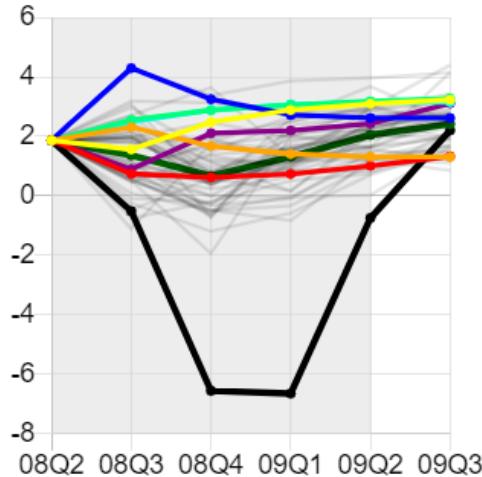


- Comparison of forecasts in 2008:III – 2009:II
- Post-crisis models

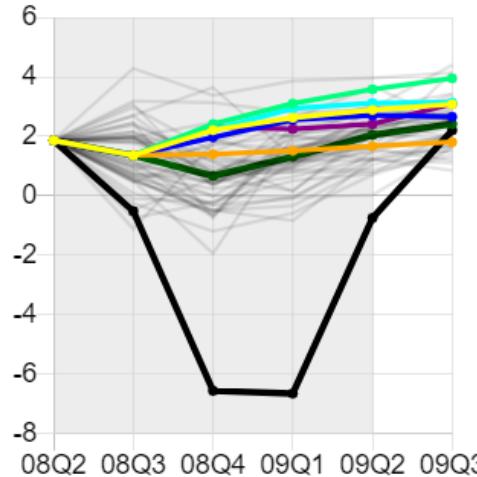


Forecast start 2008Q3

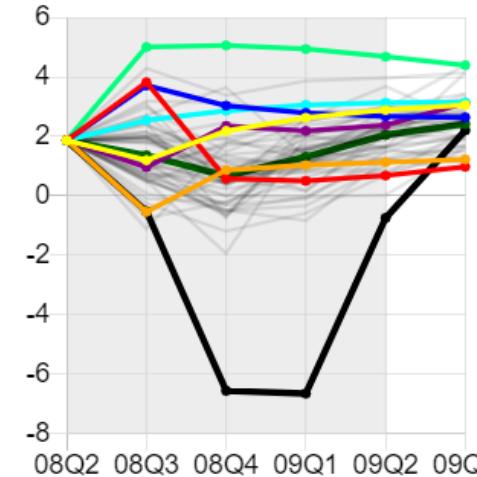
Balanced panel



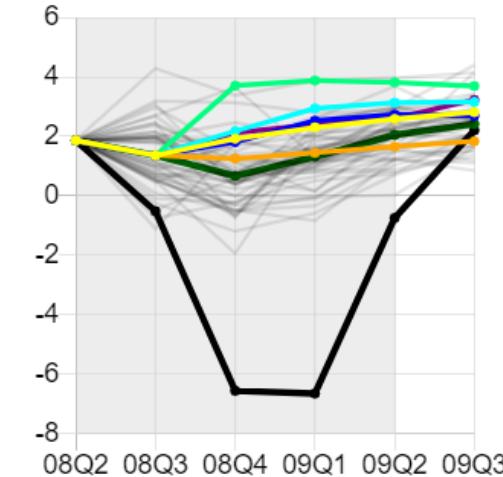
Conditioning on SPF nowcast



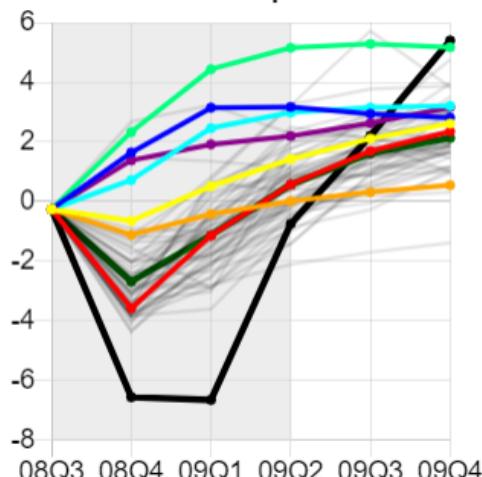
Conditioning on current-quarter observations



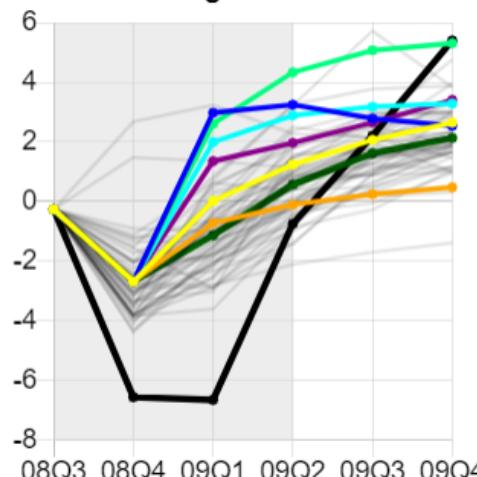
Full conditioning



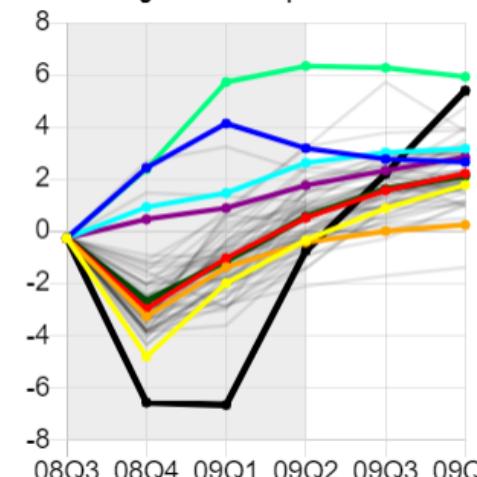
Balanced panel



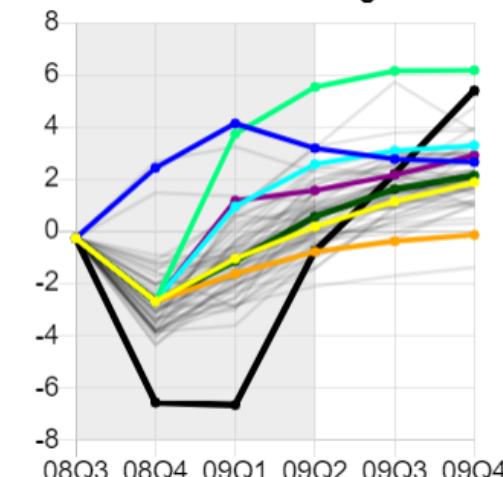
Conditioning on SPF nowcast



Conditioning on current-quarter observations



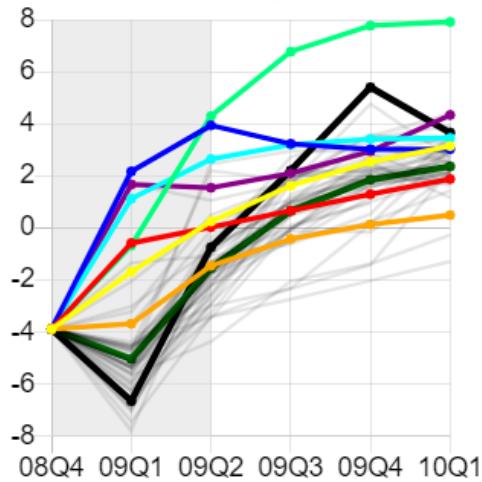
Full conditioning



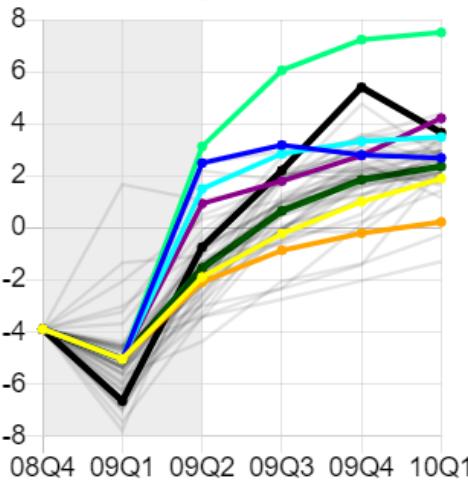
CMR14 DNGS15 IN10 KR15_FF KR15_HH NKBGG QPM08 SPFIndividual SPFMean Actual

Forecast start 2009Q1

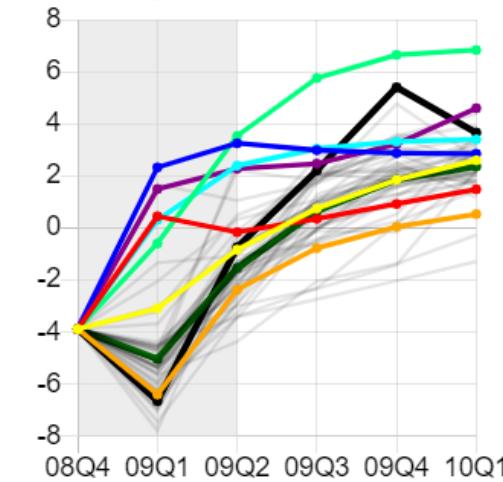
Balanced panel



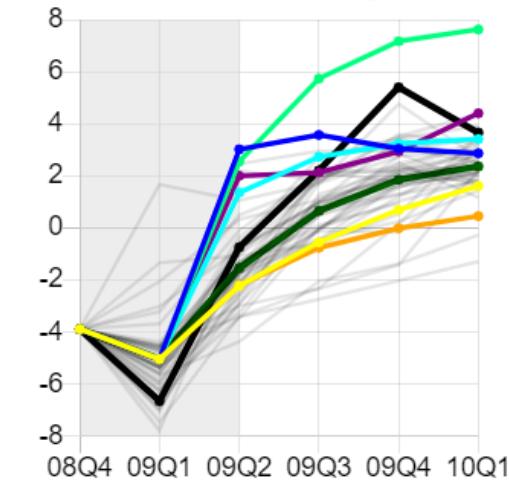
Conditioning on SPF nowcast



Conditioning on current-quarter observations

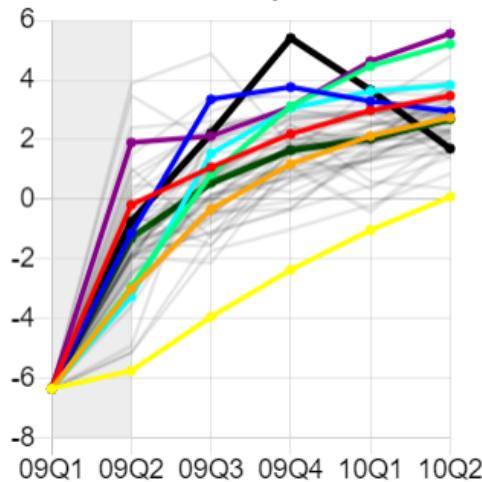


Full conditioning

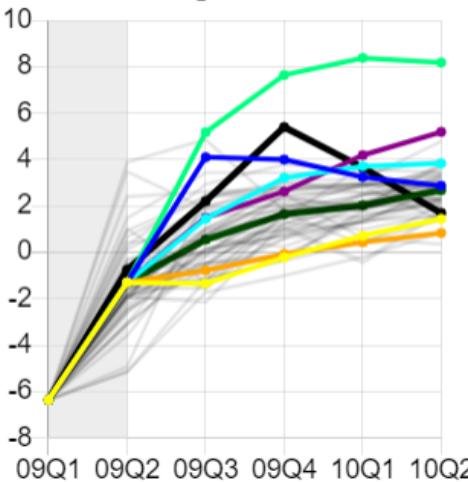


Forecast start 2009Q2

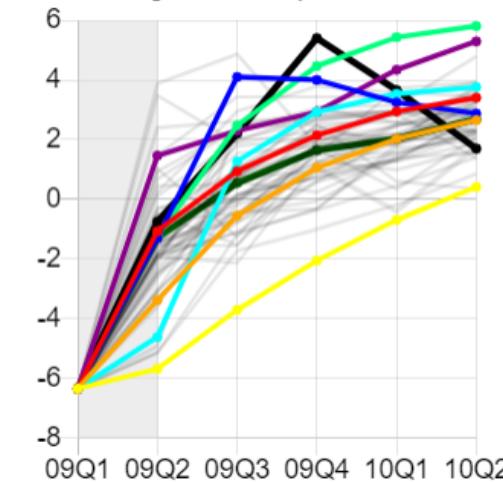
Balanced panel



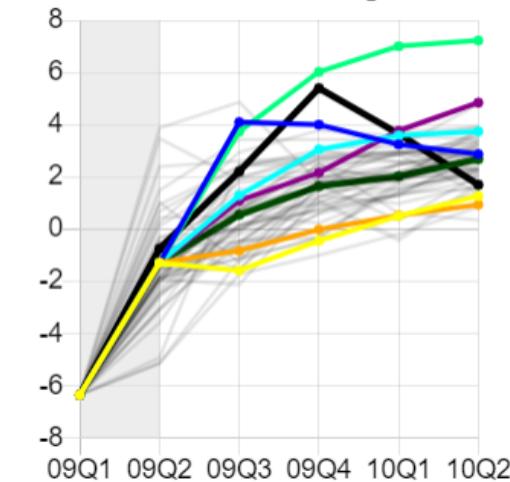
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning

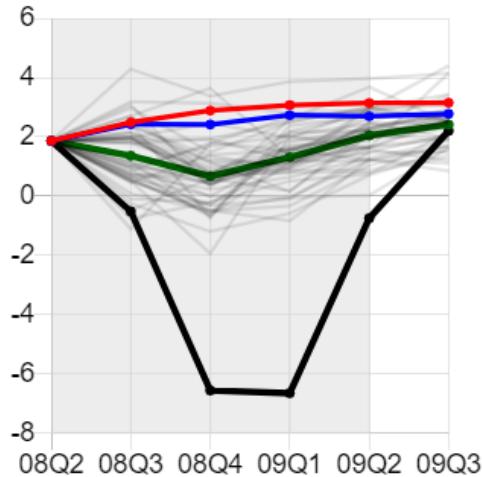


- Comparison of forecasts in 2008:III – 2009:II
- Structural models versus time-series models

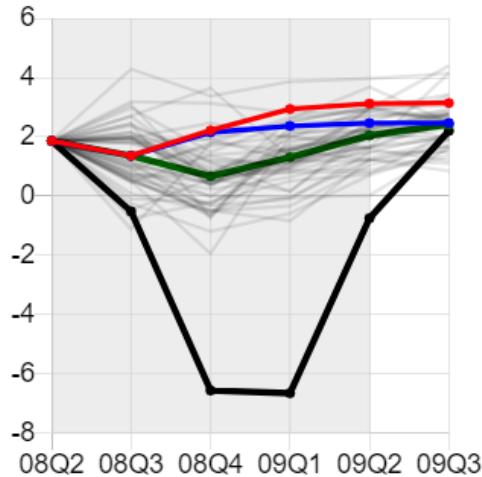
NKBGG GLP5v SPFIndividual SPFMean Actual

Forecast start 2008Q3

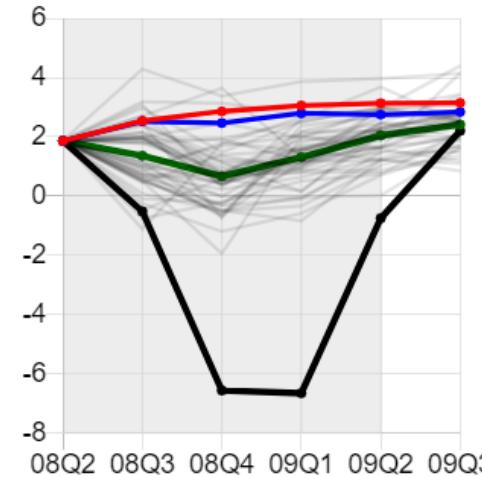
Balanced panel



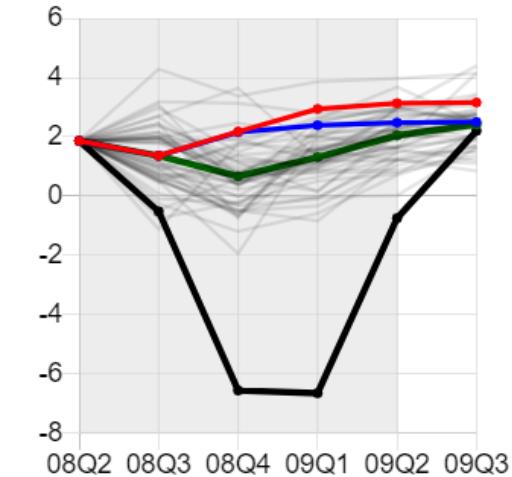
Conditioning on SPF nowcast



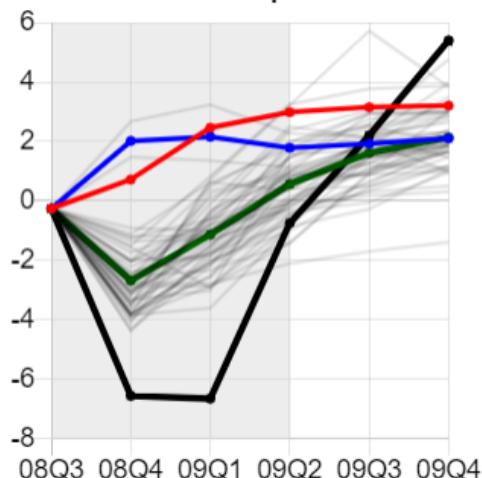
Conditioning on current-quarter observations



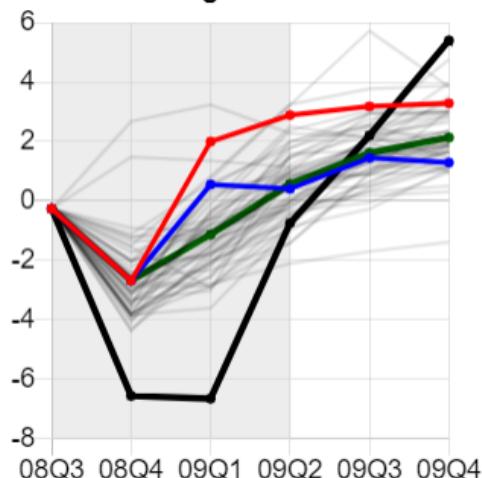
Full conditioning



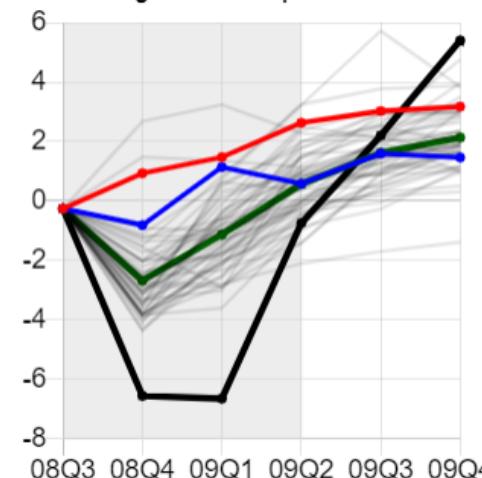
Balanced panel



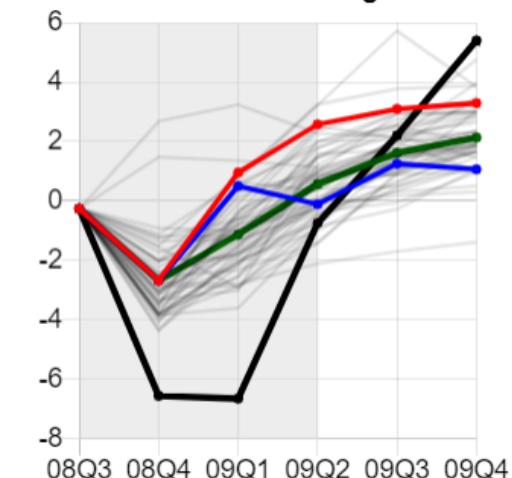
Conditioning on SPF nowcast



Conditioning on current-quarter observations



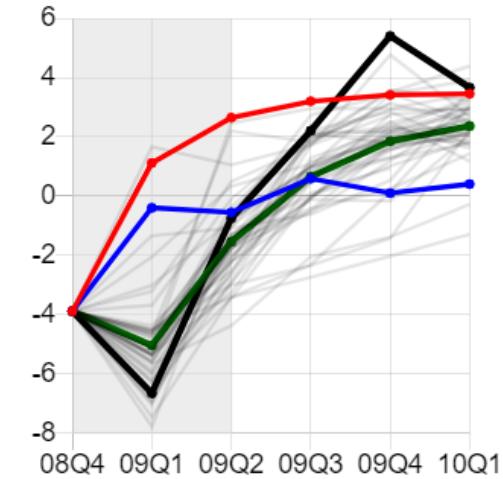
Full conditioning



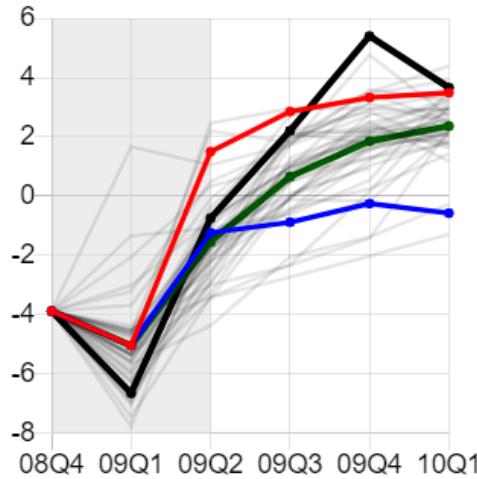
NKBGG GLP5v SPFIndividual SPFMean Actual

Forecast start 2009Q1

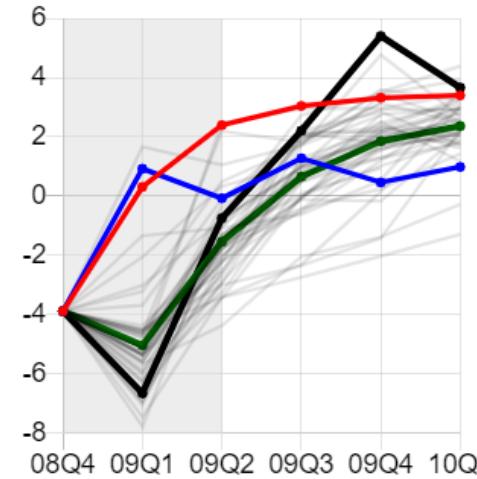
Balanced panel



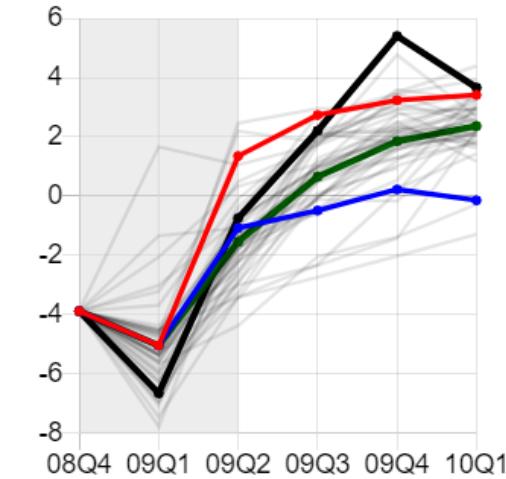
Conditioning on SPF nowcast



Conditioning on current-quarter observations

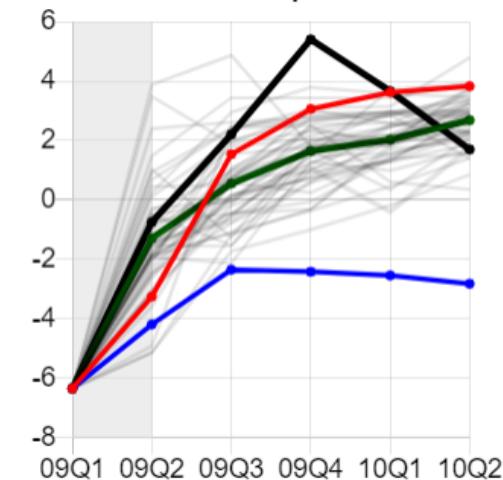


Full conditioning

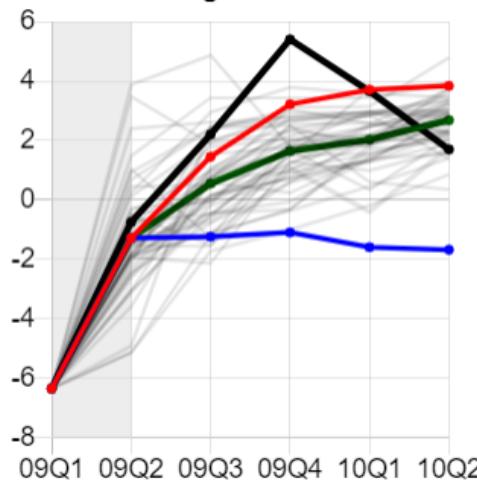


Forecast start 2009Q2

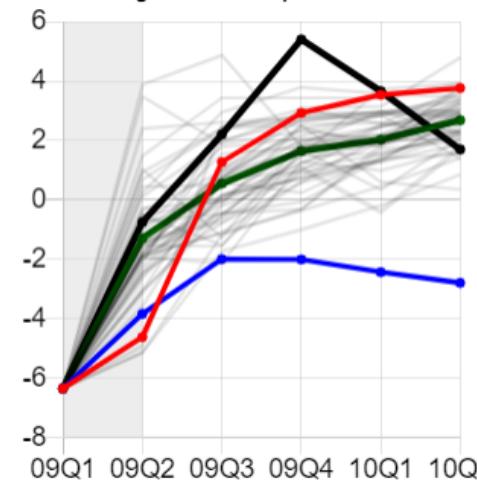
Balanced panel



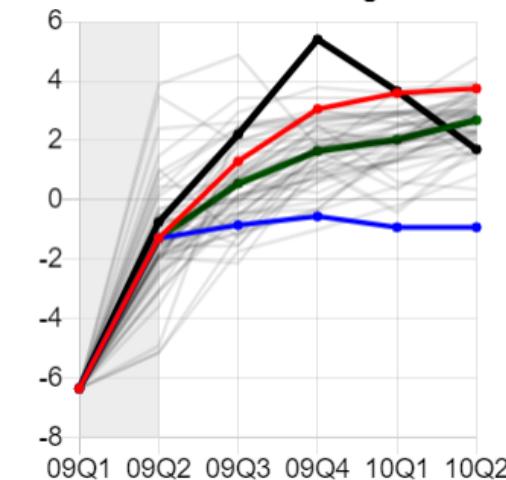
Conditioning on SPF nowcast



Conditioning on current-quarter observations



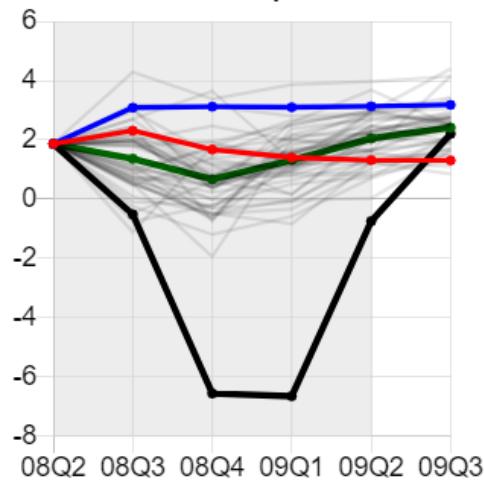
Full conditioning



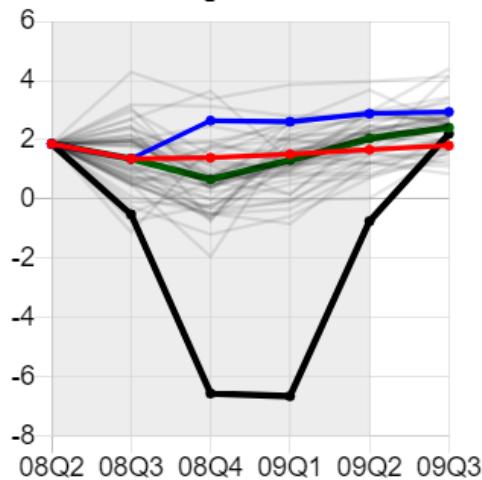
DNGS15 GLP8v SPFIndividual SPFMean Actual

Forecast start 2008Q3

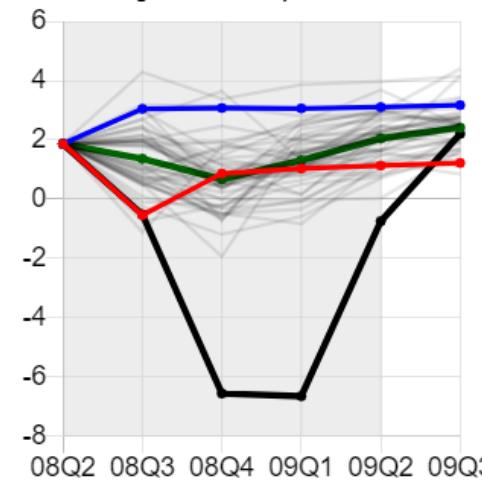
Balanced panel



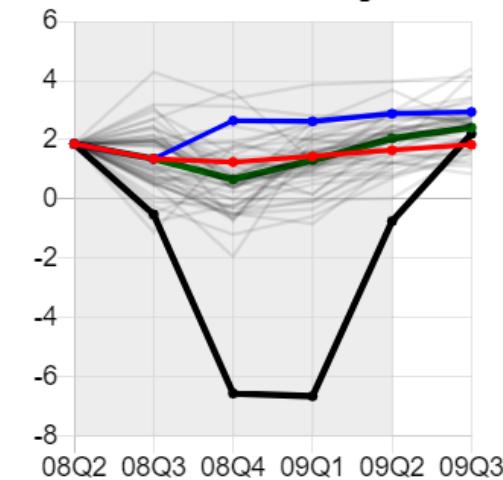
Conditioning on SPF nowcast



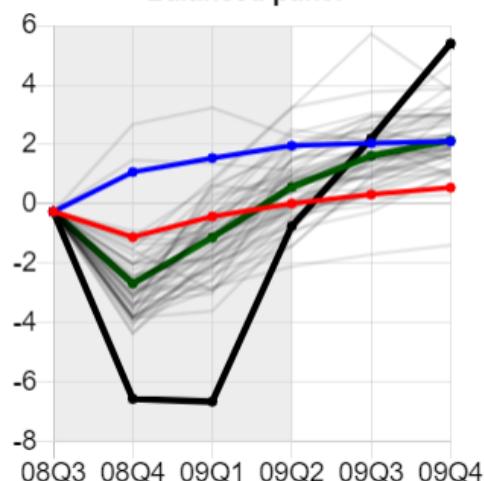
Conditioning on current-quarter observations



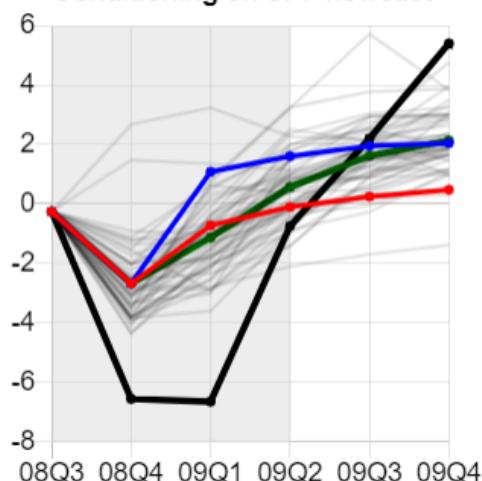
Full conditioning



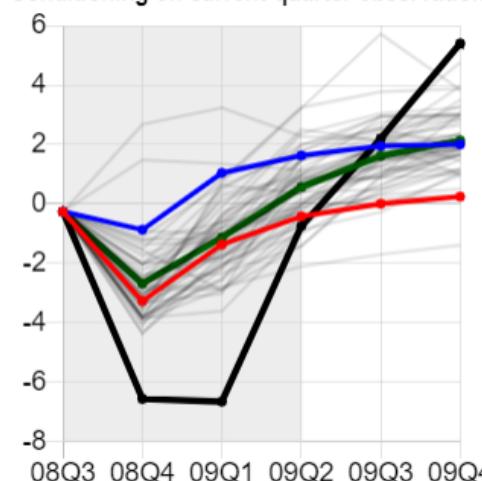
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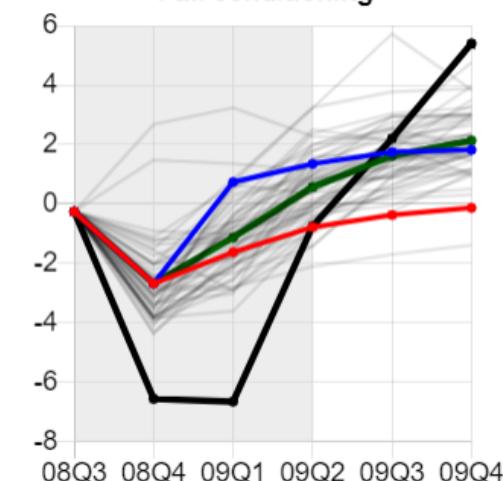
Conditioning on SPF nowcast



Conditioning on current-quarter observations



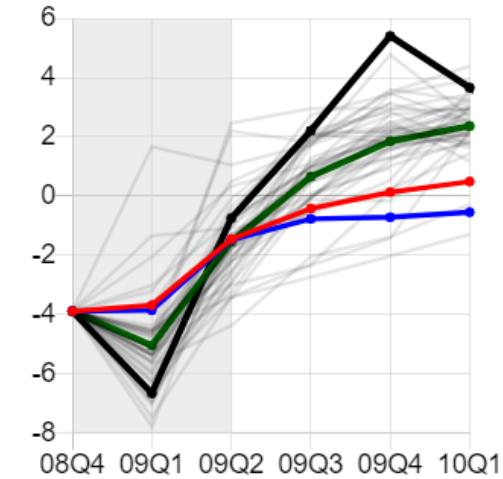
Full conditioning



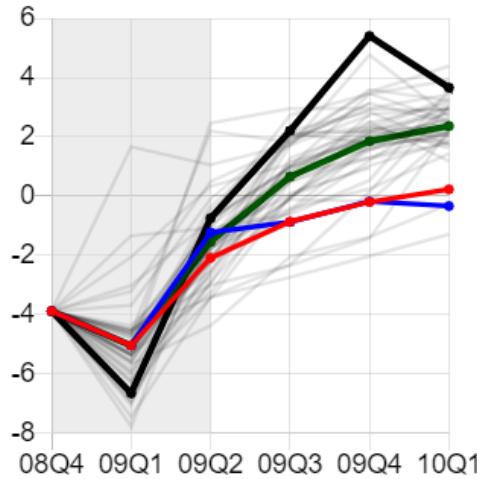
DNGS15 GLP8v SPFIndividual SPFMean Actual

Forecast start 2009Q1

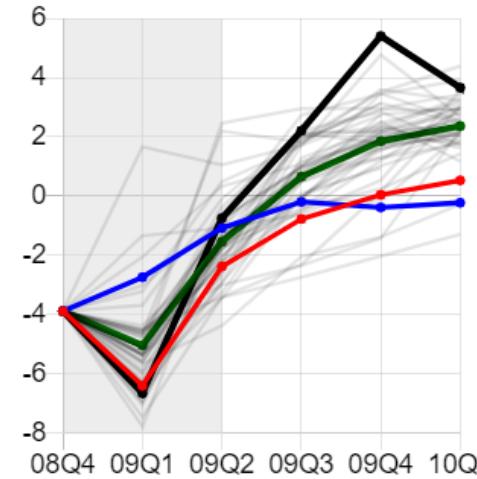
Balanced panel



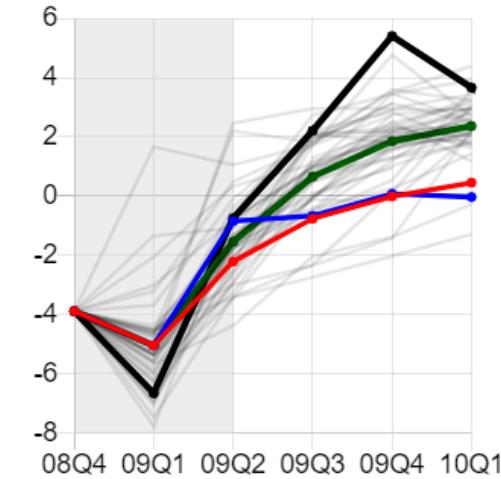
Conditioning on SPF nowcast



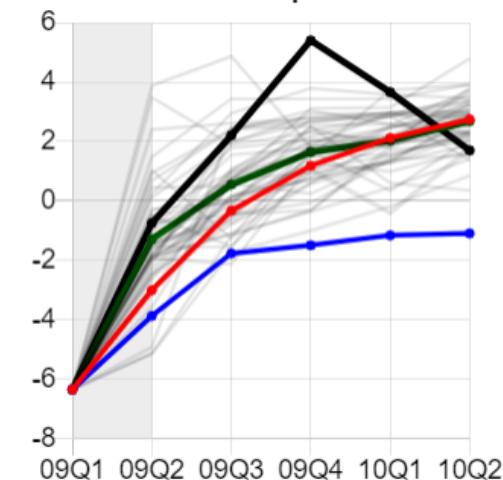
Conditioning on current-quarter observations



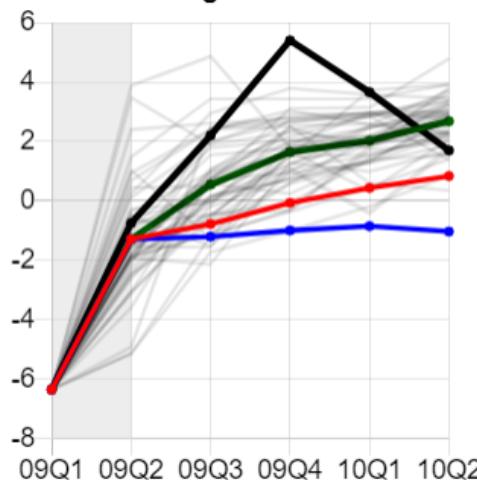
Full conditioning



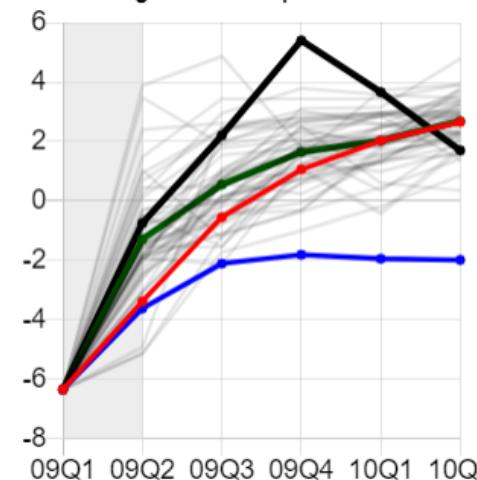
Balanced panel



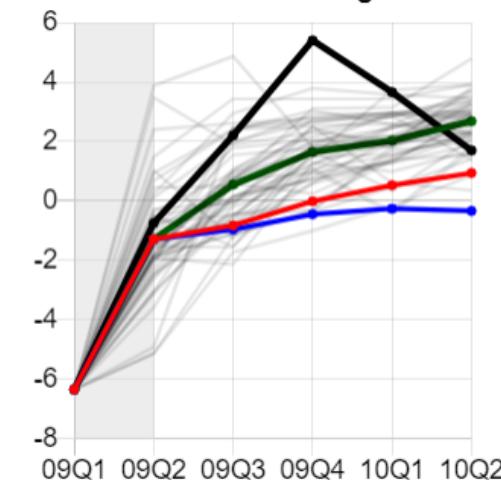
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning



- **Comparison of relative* RMSEs in 2008:III – 2009:II**

* RMSEs are reported relative to those of the RMSE of the mean SPF forecast, for which absolute RMSEs are reported in the last column.

Source	SW07				DS04				WW11				FU20				GSW12				FRBEDO08				Fair	
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC														
Horizon	0	1.76	2.06		2.10	2.72			2.37	2.88			2.38	2.15			1.88	1.69			2.50	1.88			1.91	
	1	1.30	1.22	1.53	1.36	1.31	1.23	1.27	1.12	1.37	1.30	1.34	1.23	1.55	1.39	1.59	1.46	1.31	1.15	1.33	1.28	1.45	1.31	1.41	1.14	1.32
	2	1.19	1.08	1.32	1.22	1.16	1.12	1.15	1.12	1.15	1.14	1.15	1.14	1.34	1.23	1.37	1.28	1.06	0.94	1.04	1.04	1.24	1.21	1.35	1.04	1.24
	3	1.08	0.82	1.11	1.04	1.11	1.13	1.14	1.22	1.05	1.09	1.08	1.14	1.11	1.06	1.12	1.16	0.73	0.55	0.77	0.63	0.89	0.94	1.40	1.06	1.21
	4	1.30	1.00	0.66	0.59	0.98	1.02	1.06	1.17	0.89	0.93	0.96	1.03	0.83	0.88	0.73	0.74	1.31	1.33	0.95	1.06	1.02	0.89	1.28	1.11	0.99

Source	NKBGG				QPM08				DNGS15				CMR14				KR15_FF				KR15_HH				
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	
Horizon	0	2.45		2.45		2.57		2.39		1.55		0.91		2.04		1.42		1.98		2.89		1.98		2.62	
	1	1.46	1.35	1.39	1.27	1.34	1.30	1.30	1.30	1.15	1.13	1.04	1.07	1.41	1.25	1.24	1.18	1.55	1.13	1.56	1.43	1.49	1.13	1.63	1.13
	2	1.19	1.16	1.17	1.15	1.06	1.08	1.05	1.09	1.05	1.14	1.03	1.13	1.38	1.25	1.33	1.23	1.21	1.05	1.21	1.09	1.32	1.07	1.52	1.26
	3	0.92	0.93	0.93	0.94	0.86	0.86	0.80	0.86	1.27	1.48	1.30	1.48	1.39	1.33	1.41	1.38	0.87	0.85	0.91	0.80	1.04	1.23	1.46	1.28
	4	0.88	0.86	0.87	0.85	1.26	1.14	1.26	1.15	1.63	1.66	1.69	1.76	0.94	0.93	1.11	1.13	0.83	0.87	0.87	0.86	1.38	2.11	1.49	1.81

Source	IN10				VI16_BGG				VI16_GK				3vBVAR				5vBVAR				8vBVAR				SPF	
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	Mean	
Horizon	0	1.49		1.96		2.19		2.09		2.20		2.09		2.58		2.61		2.49		2.26		2.03		1.79		2.32
	1	0.99		0.99		1.47	1.11	1.48	1.13	1.42	1.06	1.45	1.06	1.38	1.26	1.37	1.26	1.44	1.28	1.36	1.26	1.44	1.35	1.41	1.32	4.64
	2	0.92		0.90		1.60	1.26	1.57	1.26	1.54	1.14	1.54	1.13	1.28	1.19	1.23	1.16	1.39	1.28	1.34	1.24	1.39	1.32	1.39	1.28	4.52
	3	0.94		0.99		2.50	2.13	2.44	2.09	2.28	1.83	2.25	1.80	1.47	1.42	1.39	1.33	1.83	1.73	1.78	1.59	1.80	1.66	1.85	1.56	2.42
	4	1.11		1.20		2.86	2.60	2.82	2.60	2.60	2.26	2.55	2.30	1.22	1.51	1.17	1.46	1.78	1.86	1.80	1.74	1.67	1.62	1.75	1.53	1.83

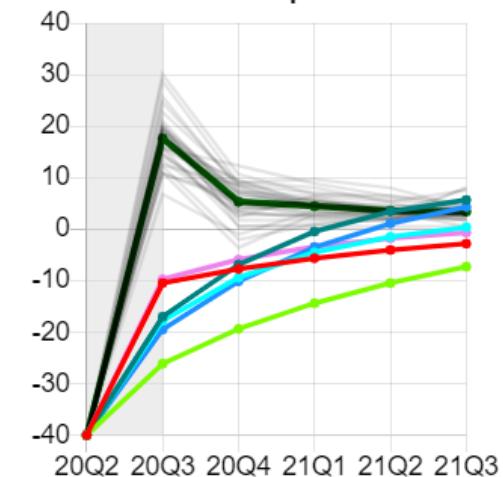
- **Comparison of forecasts in 2020:I – 2020:III***
- **Pre-crisis models**

* The actual GDP growth in 2020:I – 2020:II are collected as of August 27, 2020.

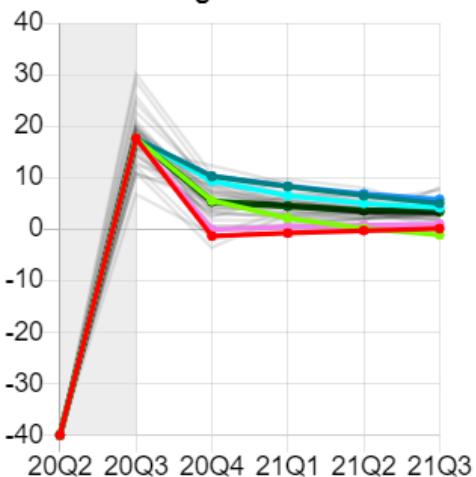
■ DS04 ■ FRBEDO08 ■ FU20 ■ GSW12 ■ SW07 ■ WW11 ■ SPFIndividual ■ SPFMean ■ Actual

Forecast start 2020Q3

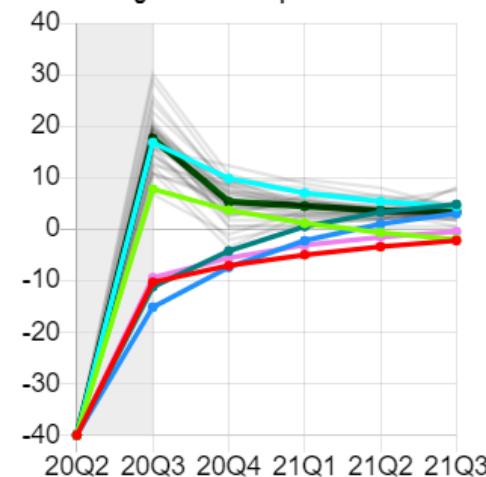
Balanced panel



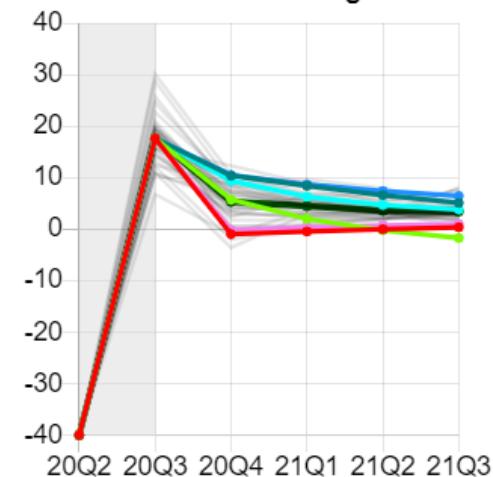
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning



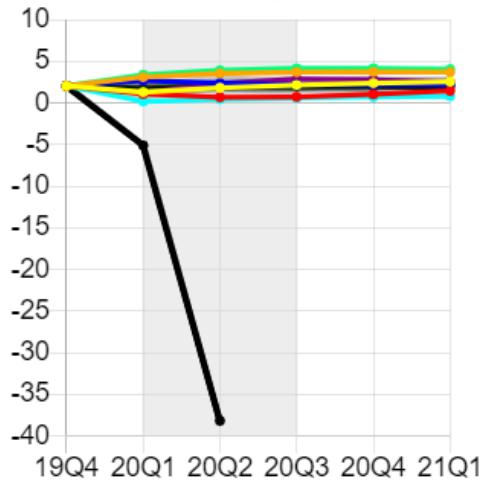
- Comparison of forecasts in 2020:I – 2020:III*
- Post-crisis models

* The actual GDP growth in 2020:I – 2020:II are collected as of August 27, 2020.

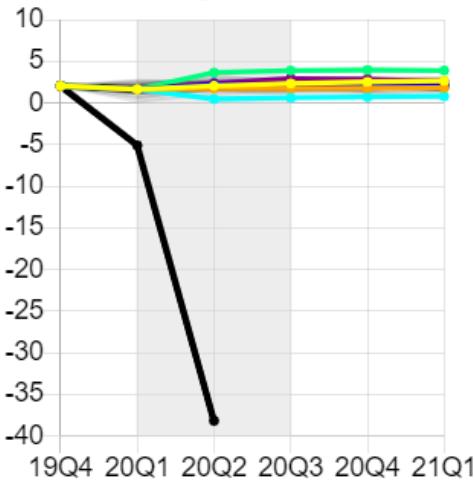
CMR14 DNGS15 IN10 KR15_FF KR15_HH NKBGG QPM08 SPFIndividual SPFMean Actual

Forecast start 2020Q1

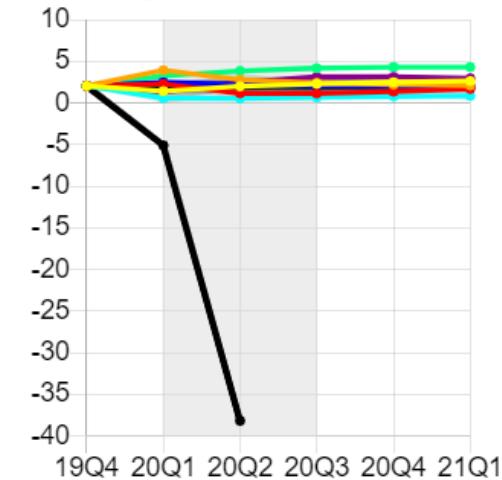
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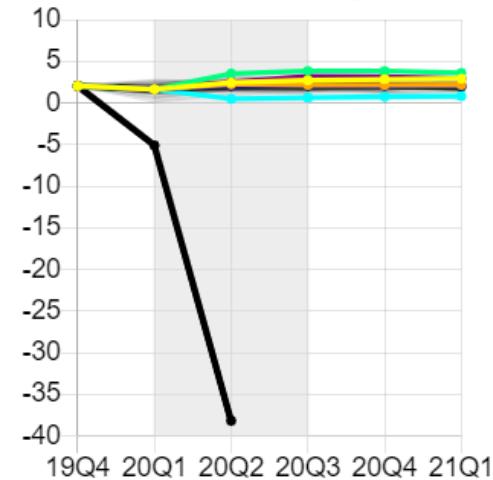
Conditioning on SPF nowcast



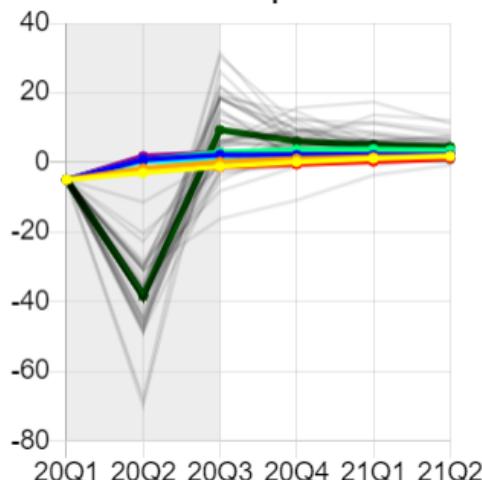
Conditioning on current-quarter observations



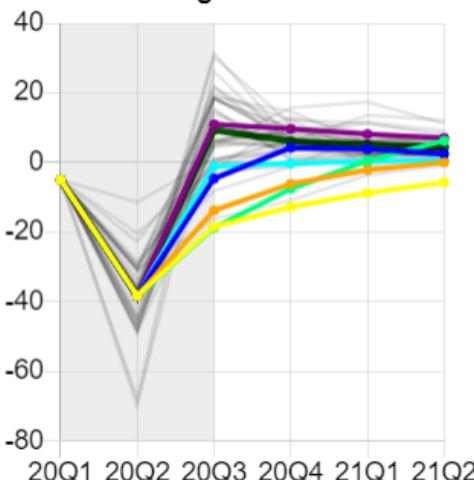
Full conditioning



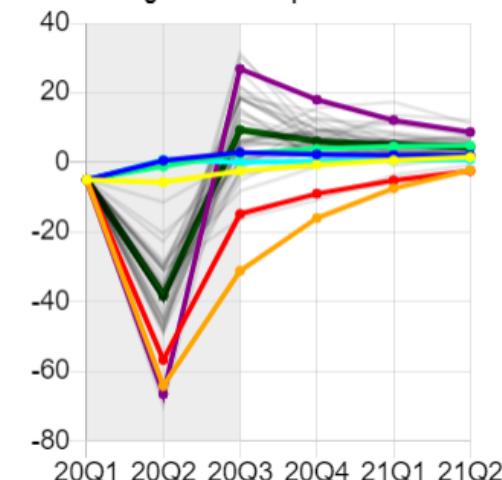
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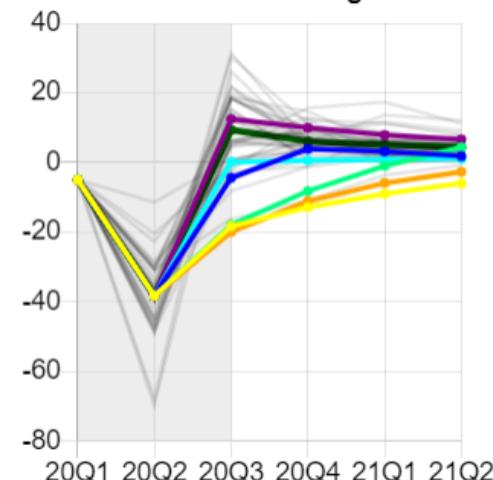
Conditioning on SPF nowcast



Conditioning on current-quarter observations



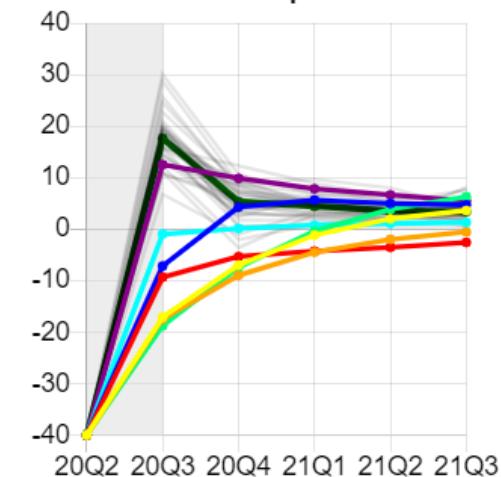
Full conditioning



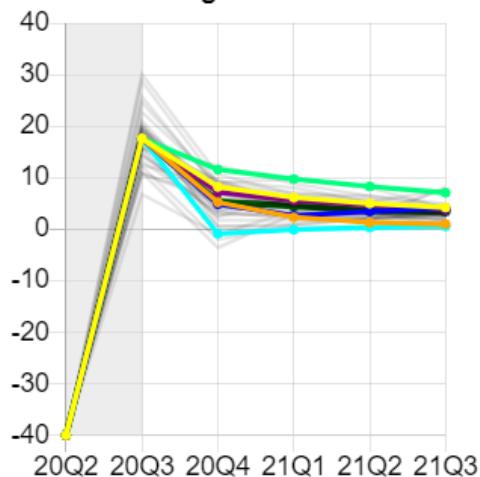
CMR14 DNGS15 IN10 KR15_FF KR15_HH NKBGG QPM08 SPFIndividual SPFMean Actual

Forecast start 2020Q3

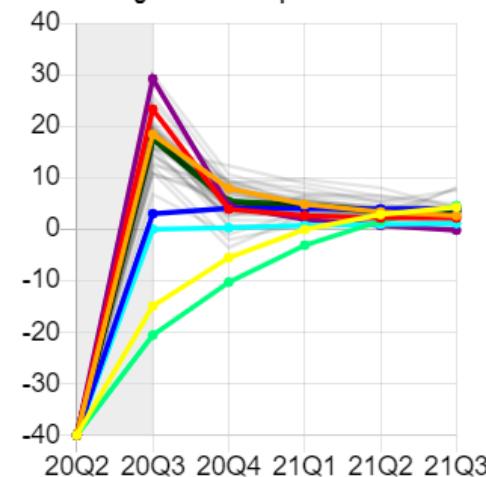
Balanced panel



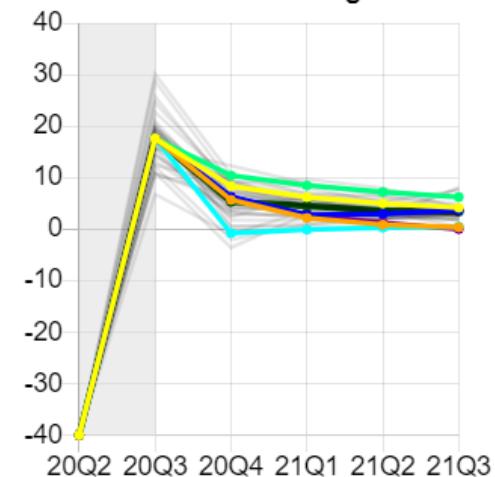
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning



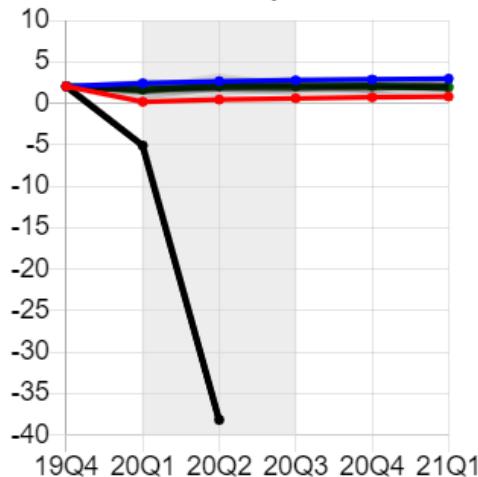
- **Comparison of forecasts in 2020:I – 2020:III***
- **Structural models versus time-series models**

* The actual GDP growth in 2020:I – 2020:II are collected as of August 27, 2020.

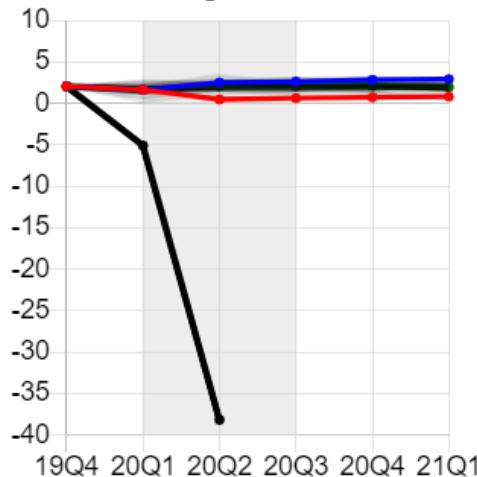
■ NKBGG ■ GLP5v ■ SPFIndividual ■ SPFMean ■ Actual

Forecast start 2020Q1

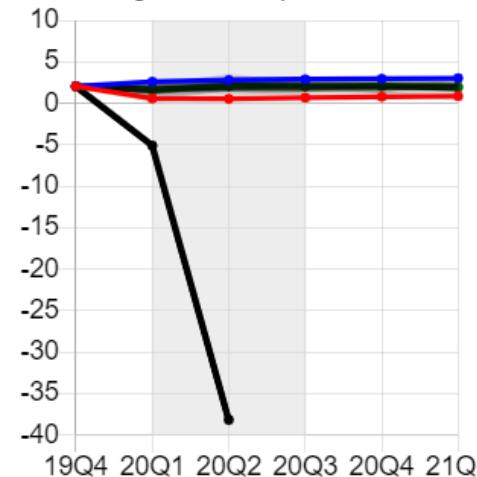
Balanced panel



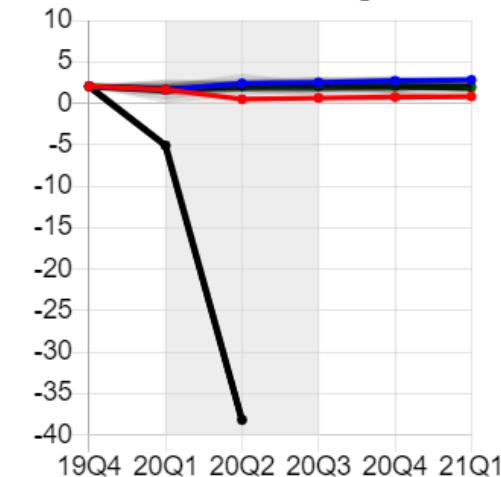
Conditioning on SPF nowcast



Conditioning on current-quarter observations

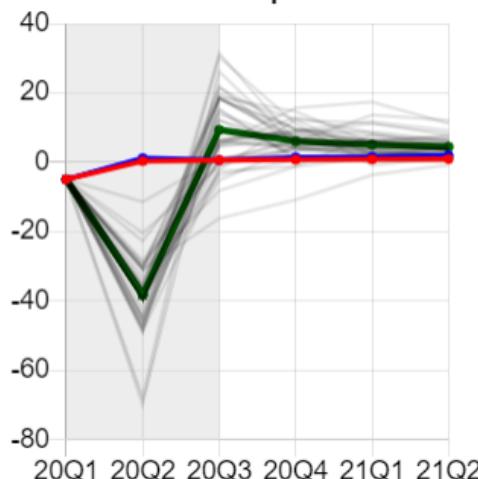


Full conditioning

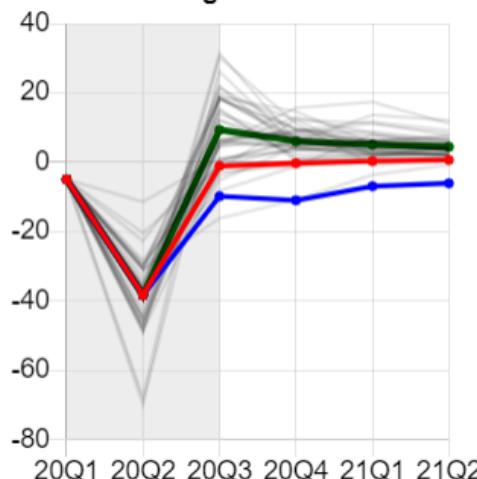


Forecast start 2020Q2

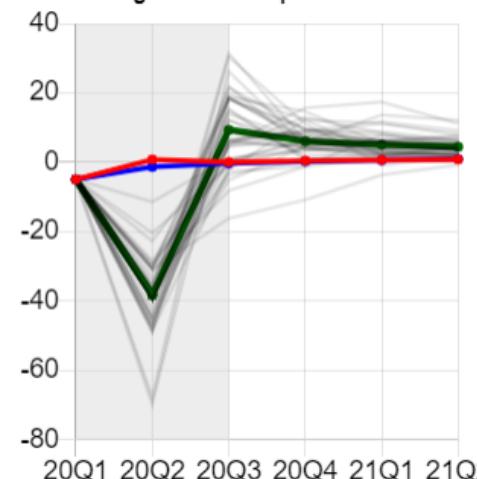
Balanced panel



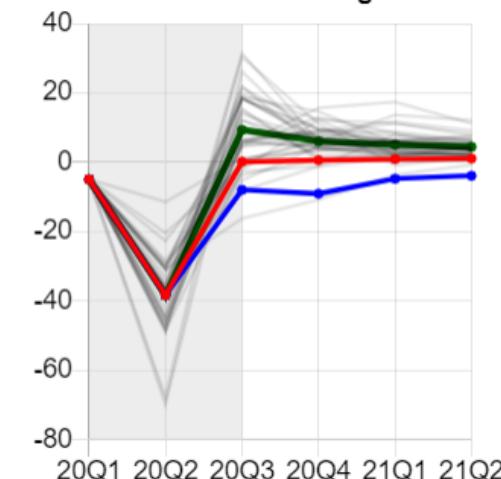
Conditioning on SPF nowcast



Conditioning on current-quarter observations



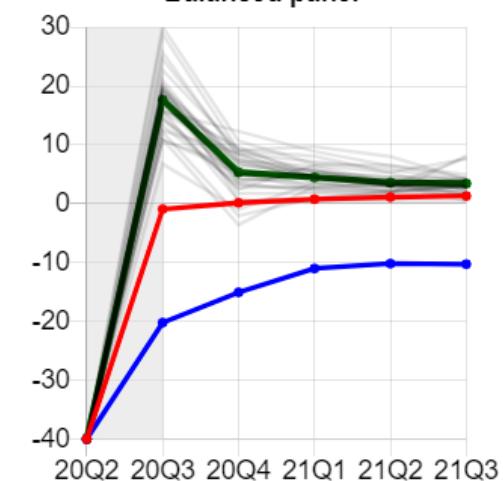
Full conditioning



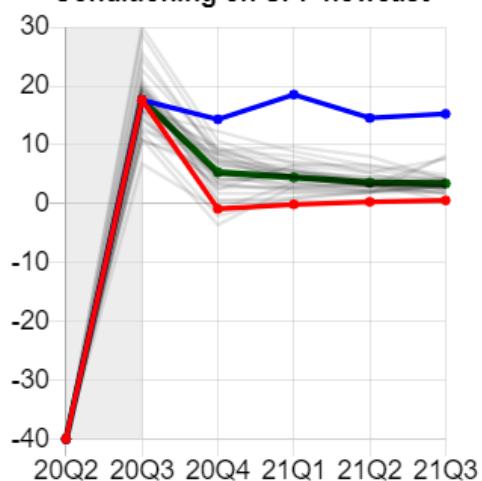
■ NKBGG ■ GLP5v ■ SPFIndividual ■ SPFMean ■ Actual

Forecast start 2020Q3

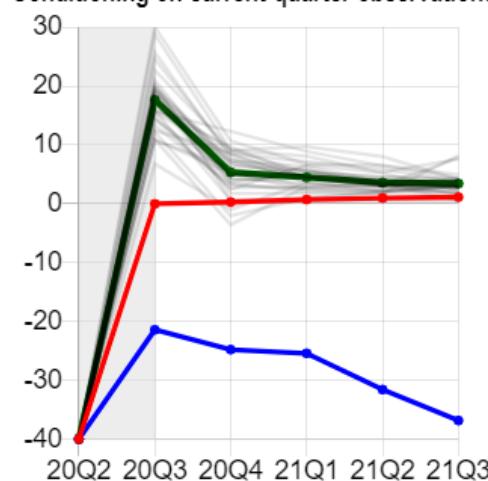
Balanced panel



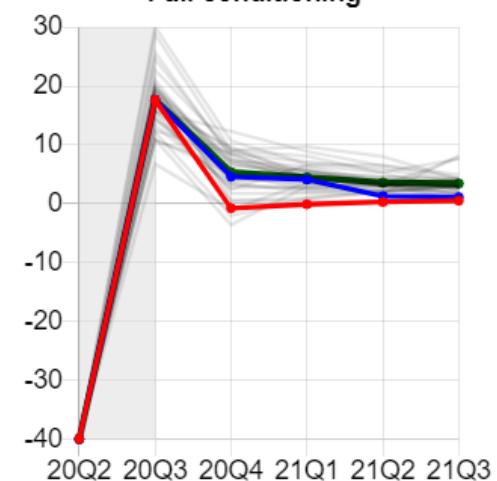
Conditioning on SPF nowcast



Conditioning on current-quarter observations



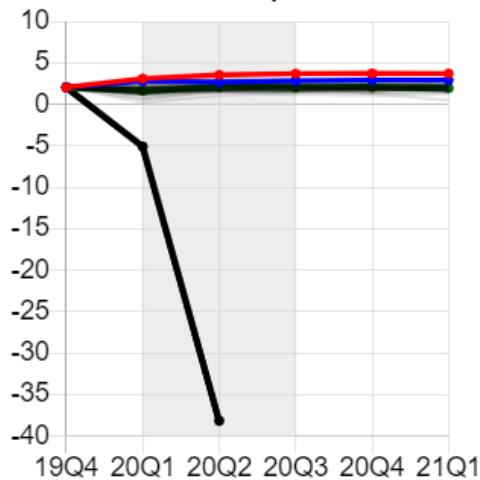
Full conditioning



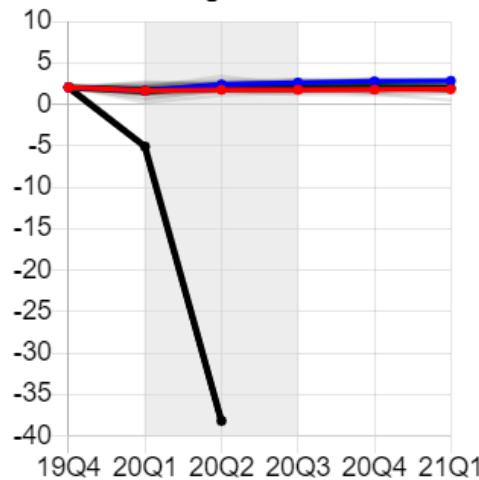
DNGS15 GLP8v SPFIndividual SPFMean Actual

Forecast start 2020Q1

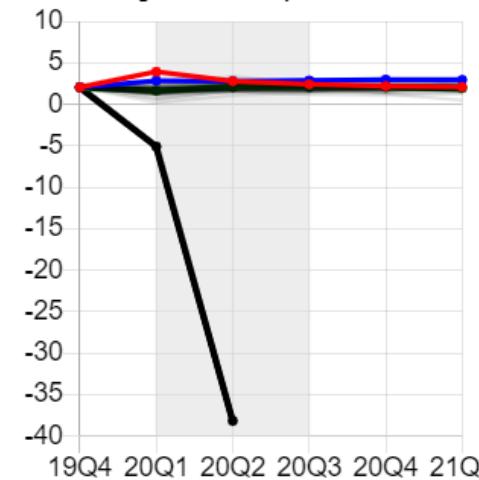
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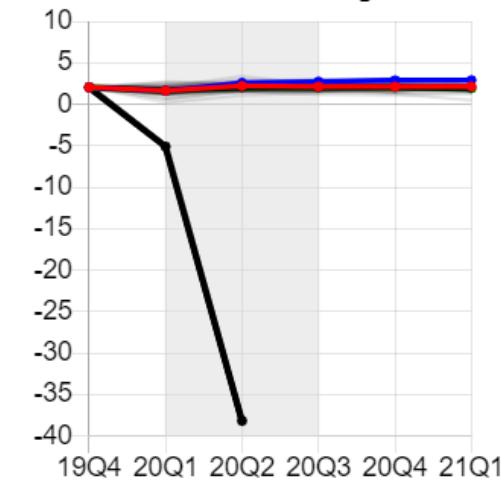
Conditioning on SPF nowcast



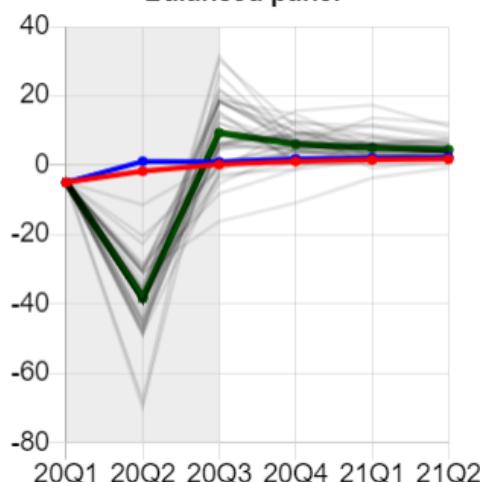
Conditioning on current-quarter observations



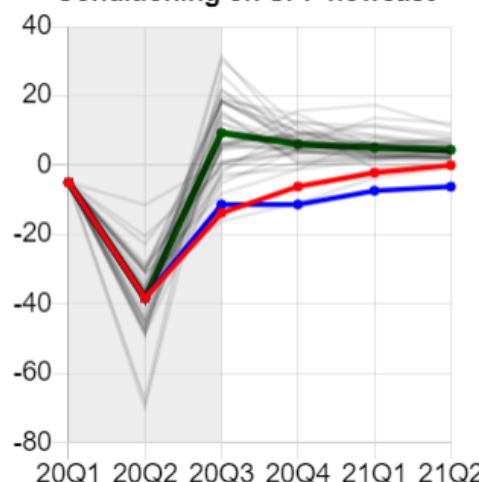
Full conditioning



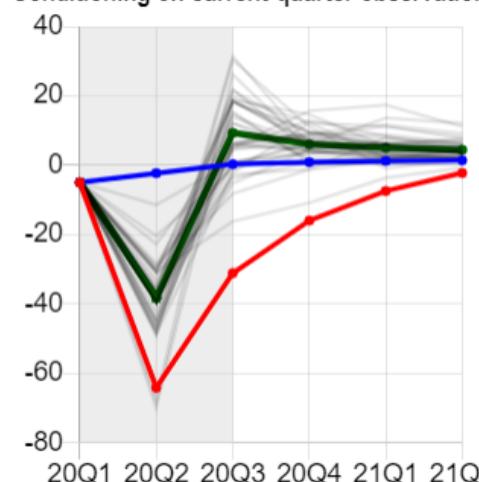
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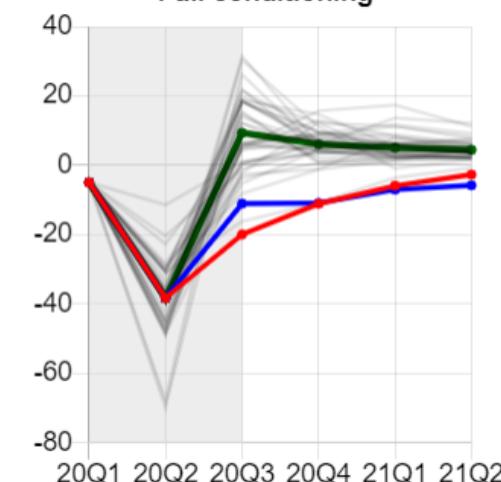
Conditioning on SPF nowcast



Conditioning on current-quarter observations



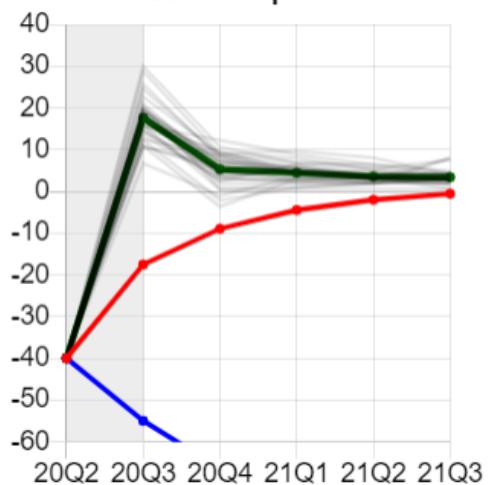
Full conditioning



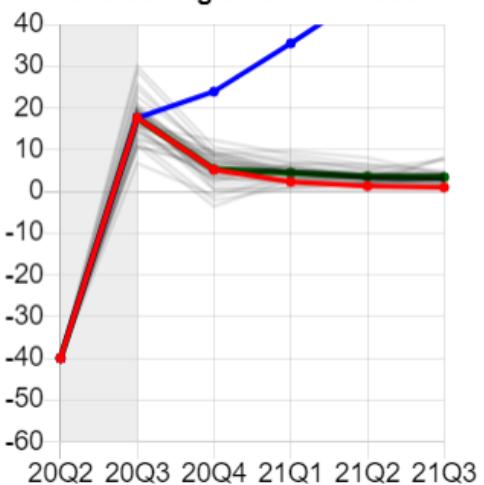
DNGS15 GLP8v SPFIndividual SPFMean Actual

Forecast start 2020Q3

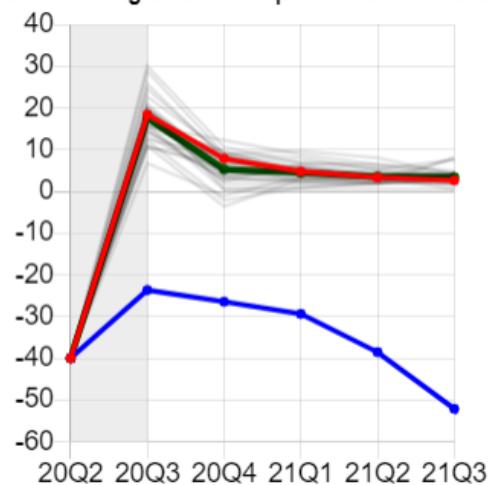
Balanced panel



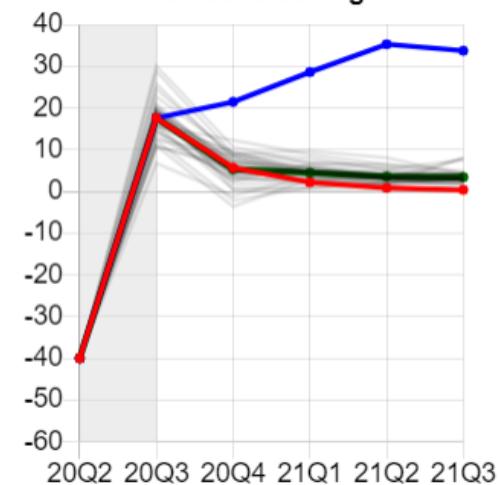
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning

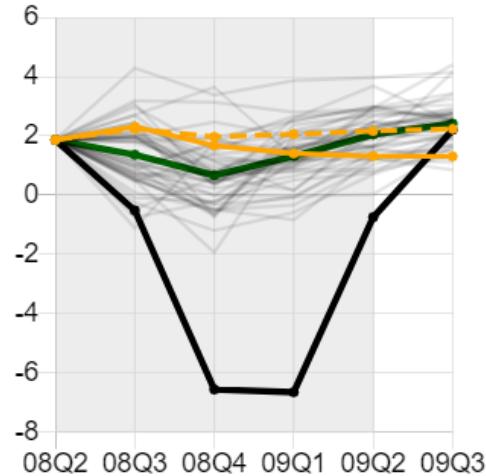


- Comparison of forecast and relative* RMSEs from the original DNGS15 model and a modified DNGS15 model with less nominal rigidities
- Forecast period: 2008:III – 2009: II

* RMSEs are reported relative to those of the RMSE of the mean SPF forecast, for which absolute RMSEs are reported in the last column.

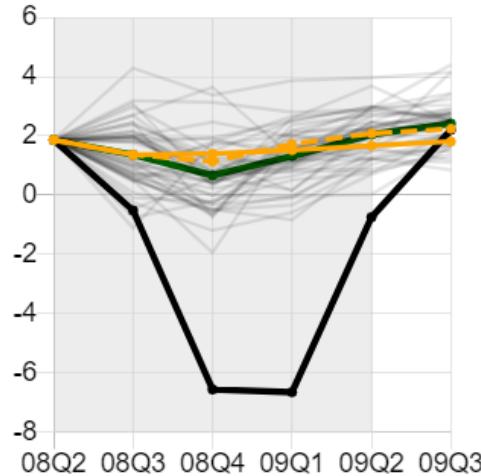
DNGS15 DNGS15_nofa SPFIndividual SPFMean Actual

Balanced panel

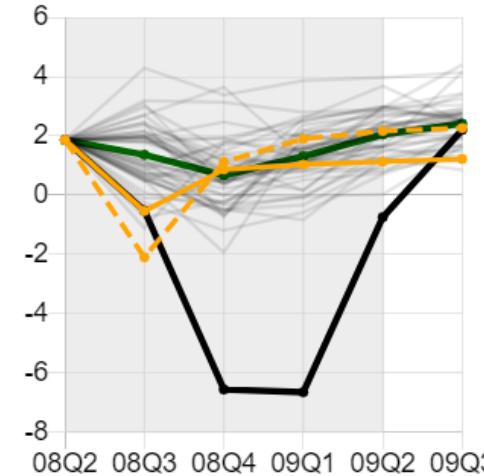


Forecast start 2008Q3

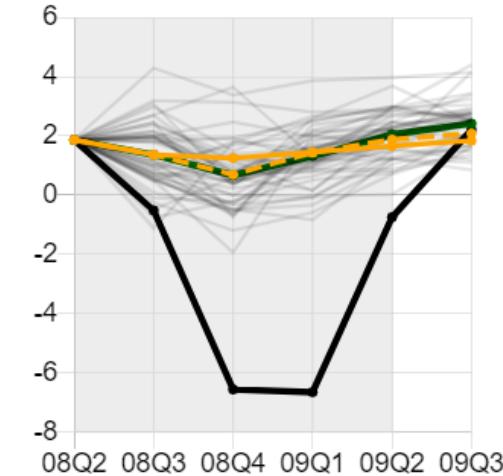
Conditioning on SPF nowcast



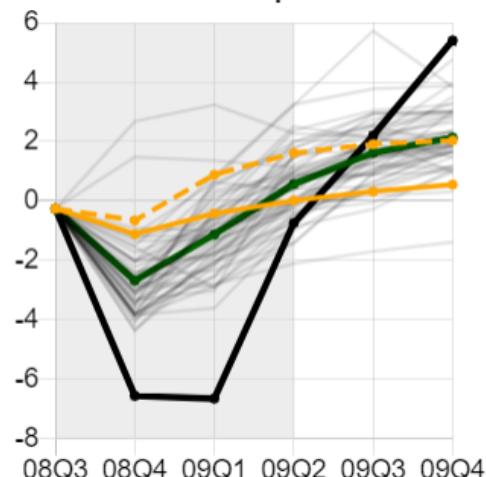
Conditioning on current-quarter observations



Full conditioning

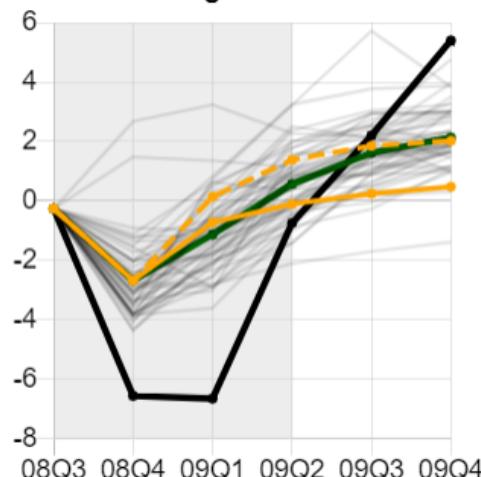


Balanced panel

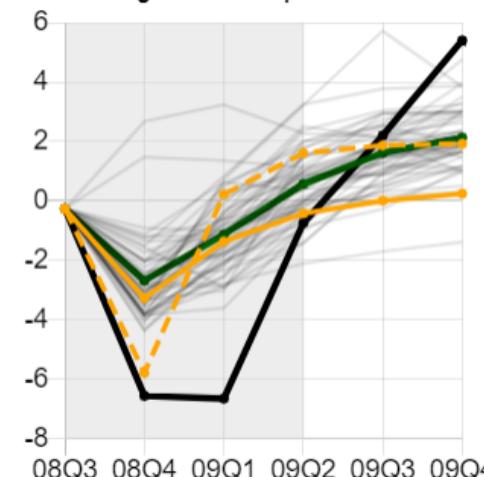


Forecast start 2008Q4

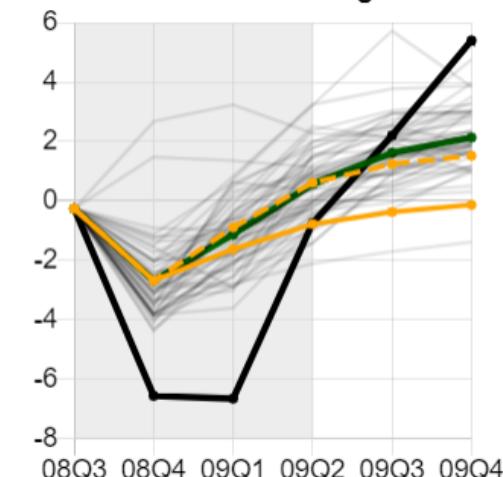
Conditioning on SPF nowcast



Conditioning on current-quarter observations



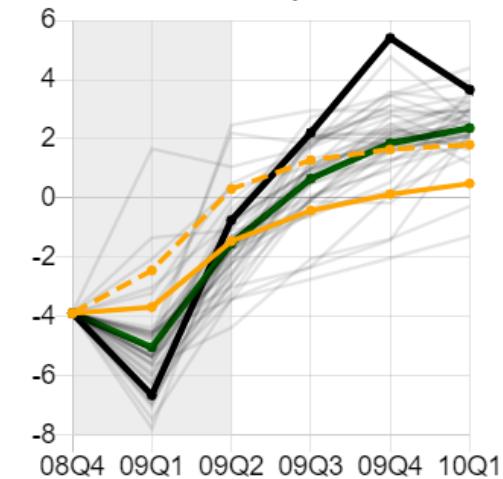
Full conditioning



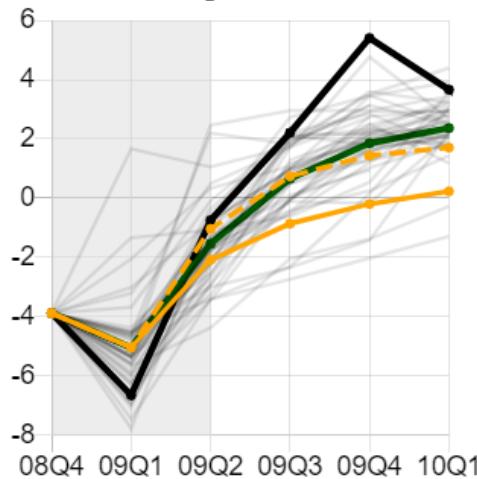
DNGS15 DNGS15_nofa SPFIndividual SPFMean Actual

Forecast start 2009Q1

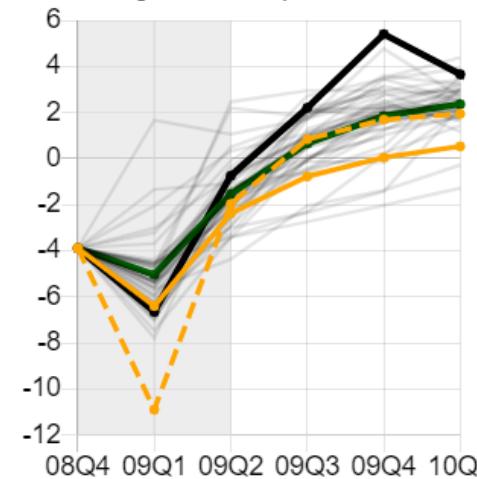
Balanced panel



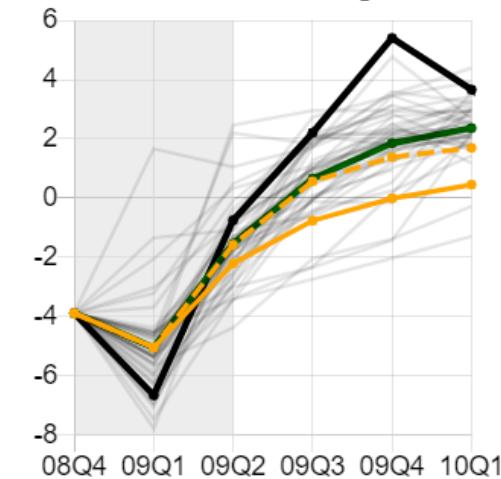
Conditioning on SPF nowcast



Conditioning on current-quarter observations

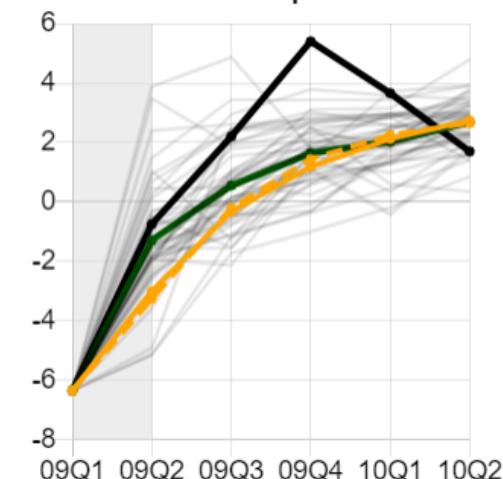


Full conditioning

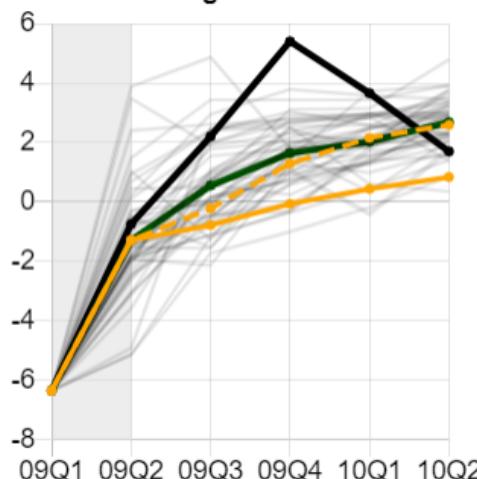


Forecast start 2009Q2

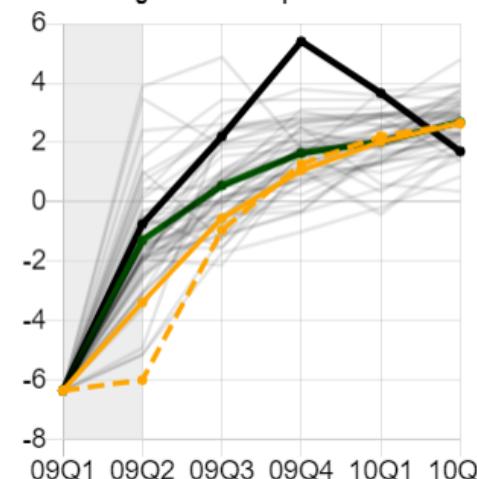
Balanced panel



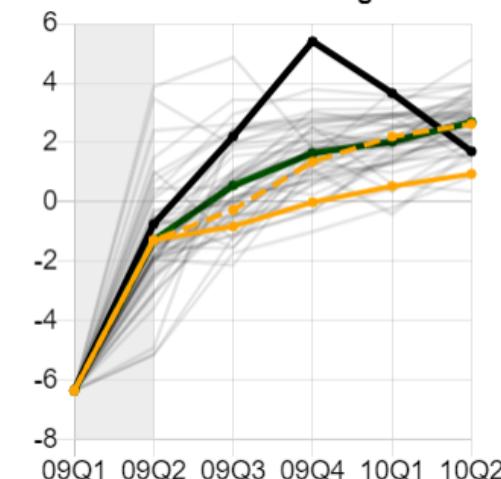
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning



Source Scenario	DNGS15				DNGS15_nofa				SPF
	BP	SPF	CQ	FC	BP	SPF	CQ	FC	
Horizon	0	1.55		0.91		1.50		1.76	2.32
	1	1.15	1.13	1.04	1.07	1.17	1.04	1.26	1.14
	2	1.05	1.14	1.03	1.13	1.09	1.03	1.09	1.07
	3	1.27	1.48	1.30	1.48	1.02	1.06	1.03	1.06
	4	1.63	1.66	1.69	1.76	1.09	1.22	1.08	1.10

- Comparison of forecast and relative* RMSEs from models estimated based on rolling-window* and expanding-window* specifications
- Models: DNGS15, SW07
- Forecast period: 2001:I – 2001: IV, 2008: III – 2009: IV, 2020: I – 2020: II

* RMSEs are reported relative to those of the RMSE of the mean SPF forecast, for which absolute RMSEs are reported in the last column.

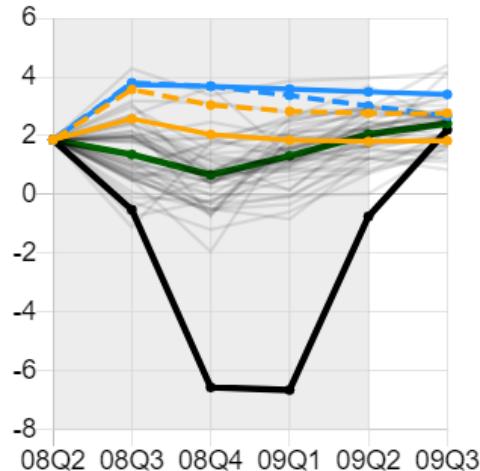
* In the rolling window specification, the size of each sample is fixed to 100

* In the expanding window specification, the start of the in-sample period is fixed to 1964:I

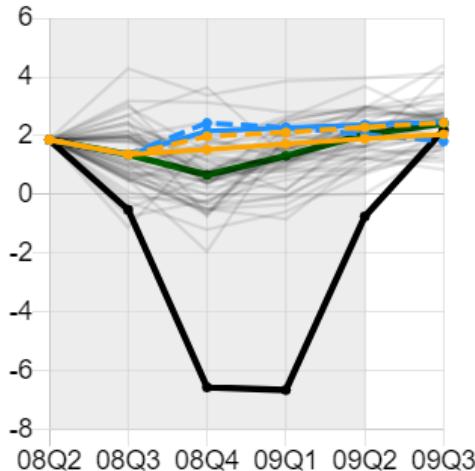
DNGS15 DNGS15_ew SW07 SW07_ew SPFIndividual SPFMean Actual

Forecast start 2008Q3

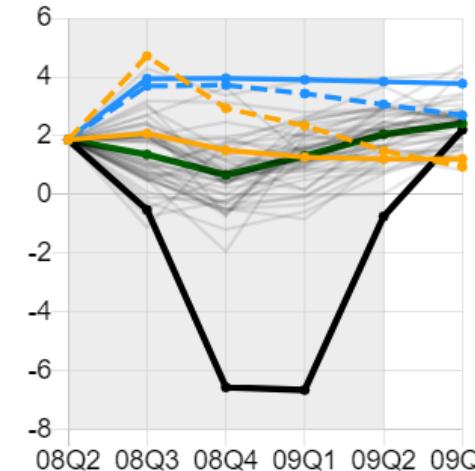
Balanced panel



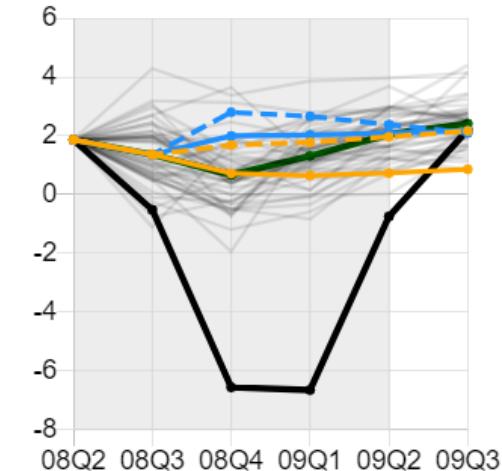
Conditioning on SPF nowcast



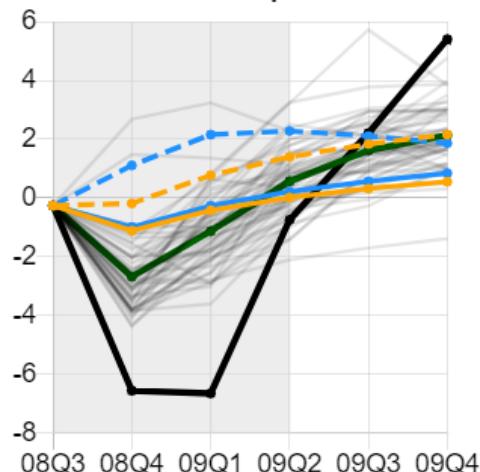
Conditioning on current-quarter observations



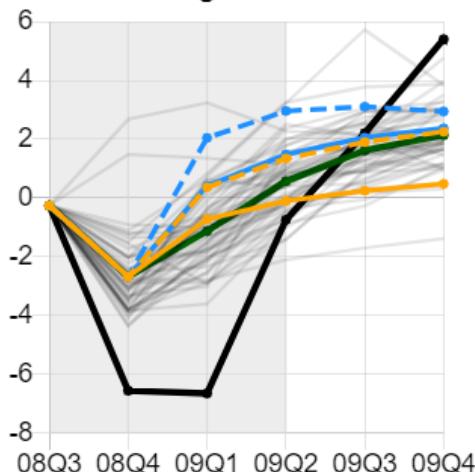
Full conditioning



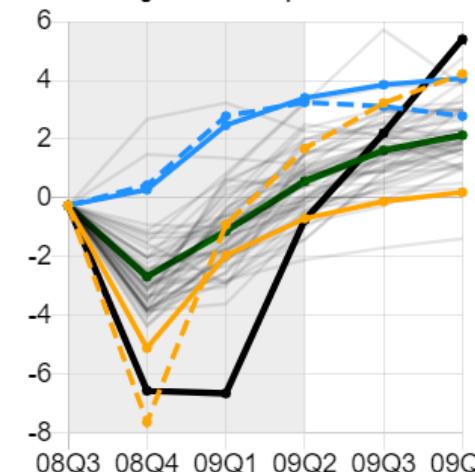
Balanced panel



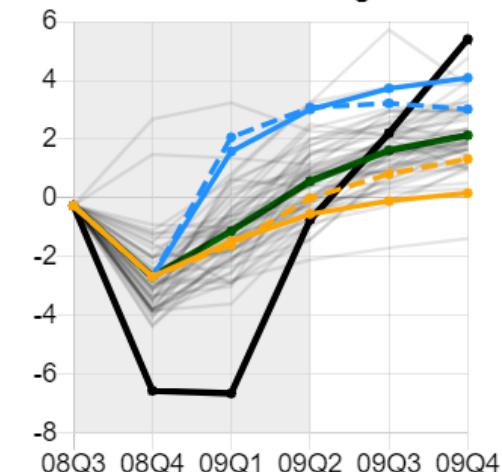
Conditioning on SPF nowcast



Conditioning on current-quarter observations



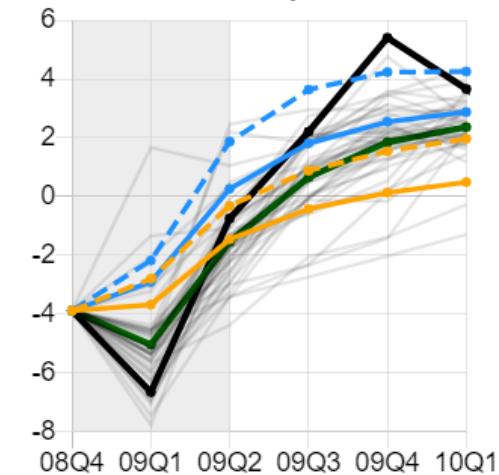
Full conditioning



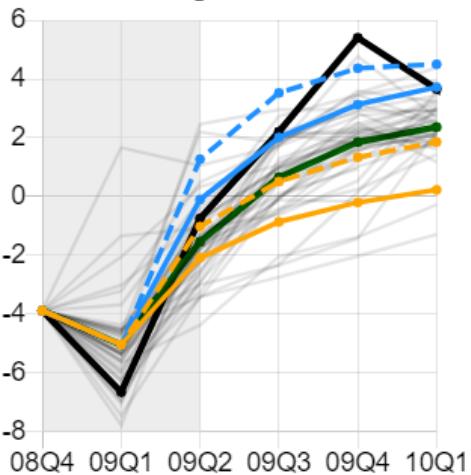
DNGS15 DNGS15_ew SW07 SW07_ew SPFIndividual SPFMean Actual

Forecast start 2009Q1

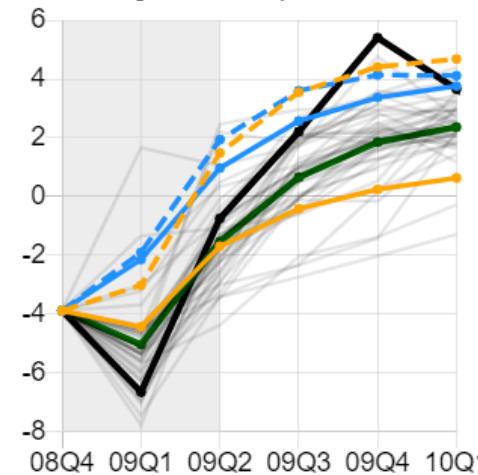
Balanced panel



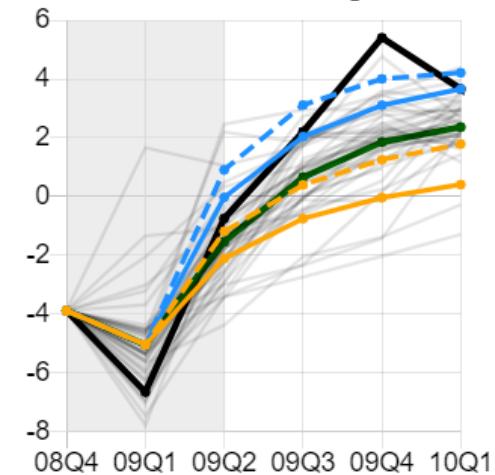
Conditioning on SPF nowcast



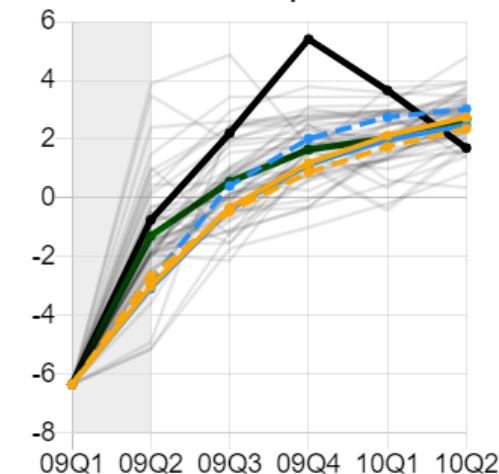
Conditioning on current-quarter observations



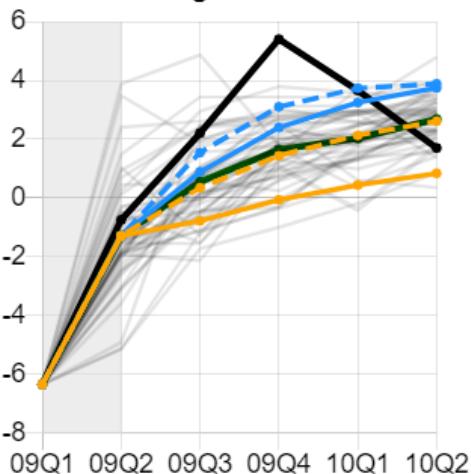
Full conditioning



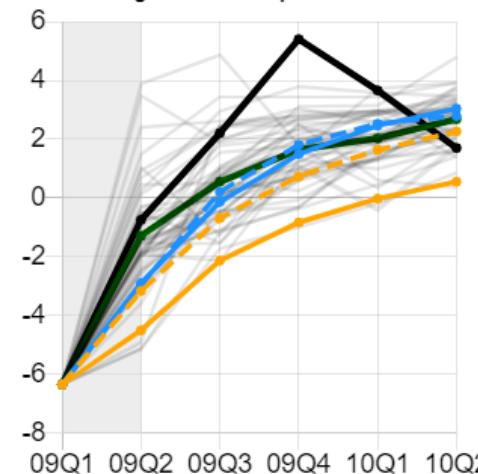
Balanced panel



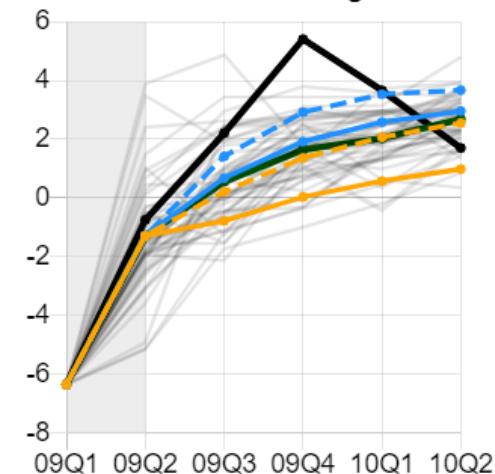
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning



Forecast period: 2001:I - 2001:IV

Source	DNGS15				DNGS15_ew				SW07				SW07_ew				SPFM	
Scenario	NoExt	SPF	CQ	FV	NoExt	SPF	CQ	FV	NoExt	SPF	CQ	FV	NoExt	SPF	CQ	FV		
Forecast Horizon	0	0.71		0.98		1.06		1.34		0.64		0.66		0.91		0.88		2.34
	1	0.99	0.97	1.08	1.05	0.98	0.94	1.07	1.03	0.68	0.66	0.69	0.69	0.73	0.78	0.78	0.74	3.05
	2	1.00	0.96	1.07	1.01	0.96	0.91	0.94	0.91	0.79	0.74	0.74	0.78	0.83	0.85	0.89	0.89	2.62
	3	1.81	1.76	1.95	1.89	1.10	1.15	1.27	1.22	1.45	1.33	1.42	1.20	1.18	0.98	1.07	1.01	1.55
	4	1.41	1.40	1.48	1.45	0.98	0.96	0.94	0.95	1.19	1.32	1.15	1.32	1.09	1.16	1.10	1.16	1.74

Forecast period: 2008:III - 2009:IV

Source	DNGS15				DNGS15_ew				SW07				SW07_ew				SPFM	
Scenario	NoExt	SPF	CQ	FV	NoExt	SPF	CQ	FV	NoExt	SPF	CQ	FV	NoExt	SPF	CQ	FV		
Forecast Horizon	0	1.57		1.14		1.88		1.49		1.79		2.07		2.18		2.09		2.32
	1	1.18	1.14	1.11	1.03	1.34	1.21	1.26	1.07	1.34	1.22	1.53	1.29	1.50	1.37	1.55	1.39	4.64
	2	1.09	1.16	1.15	1.05	1.20	1.11	1.16	1.06	1.23	1.07	1.33	1.12	1.23	1.11	1.27	1.15	4.52
	3	1.31	1.50	1.45	1.41	1.15	1.10	0.69	1.11	1.16	0.80	1.12	0.85	0.84	0.64	0.88	0.74	2.42
	4	1.61	1.66	1.70	1.74	1.03	1.03	0.57	1.25	1.33	1.00	0.67	0.50	1.05	0.93	0.80	0.86	1.83

Source	SW07				DS04				WW11				FU20				GSW12				FRBEDO08				Fair	
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC														
Horizon	0	0.71	0.74		0.81	1.02			0.96	1.12			0.63	0.66			0.85	1.52			0.71	1.06			1.16	
	1	0.70	0.67	0.70	0.70	0.94	0.96	0.97	1.03	0.95	0.96	0.95	1.00	0.64	0.71	0.72	0.72	0.99	0.91	0.74	0.79	0.85	0.99	0.94	0.97	1.01
	2	0.79	0.74	0.73	0.78	0.96	0.91	0.96	0.91	0.97	0.93	0.97	0.92	0.78	0.74	0.75	0.73	0.84	0.88	0.80	0.83	0.97	0.89	0.94	0.91	0.78
	3	0.90	0.83	0.88	0.75	0.66	0.69	0.71	0.76	0.64	0.67	0.67	0.72	0.88	0.82	0.82	0.76	0.87	0.65	0.93	0.84	0.66	0.75	0.70	0.70	0.89
	4	0.81	0.90	0.79	0.90	0.61	0.61	0.61	0.61	0.61	0.61	0.60	0.59	0.90	0.93	0.88	0.90	1.16	1.14	1.14	1.12	0.62	0.61	0.61	0.62	0.79

Source	NKBGG				QPM08				DNGS15				CMR14				KR15_FF				KR15_HH					
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC		
Horizon	0	0.59	0.73		0.75	0.98			0.80	1.25			0.56	0.74			0.79	1.55			0.79	0.84				
	1	0.77	0.83	0.81	0.88	0.75	0.69	0.69	0.73	1.00	0.99	1.09	1.07	0.86	0.96	0.92	1.02	1.01	1.24	1.12	1.24	1.02	1.24	0.72	1.24	
	2	0.81	0.82	0.79	0.79	0.87	0.95	0.85	0.86	1.00	0.96	1.06	1.01	0.98	0.88	0.93	0.92	0.91	0.82	0.98	0.86	0.88	0.67	0.98	0.92	
	3	0.77	0.75	0.80	0.78	0.57	0.63	0.55	0.50	1.13	1.10	1.23	1.20	0.98	1.02	1.04	1.06	0.74	0.65	0.69	0.67	0.70	0.77	0.52	0.64	
	4	0.80	0.80	0.80	0.80	0.71	0.75	0.73	0.76	0.96	0.96	1.00	0.98	0.81	0.84	0.82	0.81	0.73	0.74	0.76	0.75	0.96	0.88	0.65	0.63	

Source	IN10				VI16_BGG				VI16_GK				3vBVAR				5vBVAR				8vBVAR				Models
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	Mean
Horizon	0	0.90	1.59		1.43	1.53			1.57	1.64			1.60	1.30			1.32	0.95			0.91	0.84			2.09
	1	1.32	1.32		1.63	1.30	1.65	1.30	1.70	1.34	1.71	1.36	1.14	1.11	1.21	1.16	1.19	1.16	1.21	1.19	0.97	0.95	1.05	1.07	2.99
	2	1.41	1.39		1.83	1.42	1.86	1.44	1.90	1.45	1.91	1.49	1.31	1.27	1.41	1.30	1.35	1.26	1.45	1.32	1.17	1.19	1.15	1.06	2.64
	3	1.72	1.60		2.23	1.96	2.28	1.99	2.29	1.97	2.31	2.04	0.86	0.82	0.93	0.87	0.84	0.83	0.92	0.88	0.74	0.80	0.73	0.77	2.50
	4	1.64	1.48		2.17	1.97	2.21	2.00	2.19	1.98	2.21	2.02	0.91	0.96	1.10	1.06	0.90	0.92	1.06	1.09	0.73	0.93	0.84	0.80	2.55

Source	SW07				DS04				WW11				FU20				GSW12				FRBEDO08				Fair	
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC														
Horizon	0	0.83	0.98		0.99	1.29			1.12	1.36			1.13	1.02			0.89	0.80			1.18	0.89			0.90	
	1	1.00	0.94	1.18	1.05	1.01	0.94	0.98	0.86	1.05	1.00	1.03	0.94	1.20	1.07	1.22	1.12	1.01	0.88	1.02	0.99	1.12	1.01	1.08	0.88	1.01
	2	0.99	0.90	1.11	1.02	0.97	0.94	0.97	0.94	0.97	0.96	0.96	0.95	1.12	1.03	1.15	1.07	0.89	0.79	0.87	0.87	1.04	1.01	1.13	0.87	1.04
	3	0.90	0.67	0.92	0.86	0.92	0.94	0.94	1.01	0.87	0.90	0.89	0.94	0.91	0.87	0.92	0.95	0.60	0.45	0.64	0.52	0.73	0.78	1.15	0.87	1.00
	4	0.99	0.77	0.51	0.46	0.75	0.79	0.81	0.90	0.68	0.71	0.74	0.79	0.64	0.68	0.56	0.57	1.01	1.02	0.73	0.81	0.78	0.68	0.98	0.85	0.76

Source	NKBGG				QPM08				DNGS15				CMR14				KR15_FF				KR15_HH				
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	
Horizon	0	1.16	1.16		1.21	1.13			0.73	0.43			0.96	0.67			0.94	1.37			0.94	1.24			
	1	1.13	1.04	1.07	0.98	1.03	1.00	1.00	1.00	0.88	0.87	0.80	0.82	1.09	0.97	0.96	0.91	1.19	0.87	1.20	1.10	1.14	0.87	1.25	0.87
	2	0.99	0.97	0.98	0.97	0.89	0.90	0.88	0.92	0.88	0.96	0.86	0.94	1.16	1.05	1.11	1.03	1.02	0.88	1.02	0.92	1.11	0.90	1.28	1.06
	3	0.76	0.77	0.76	0.77	0.71	0.71	0.66	0.71	1.05	1.22	1.08	1.22	1.14	1.10	1.16	1.14	0.72	0.70	0.75	0.66	0.86	1.02	1.21	1.05
	4	0.67	0.66	0.67	0.65	0.96	0.87	0.97	0.88	1.25	1.27	1.30	1.35	0.72	0.71	0.85	0.87	0.63	0.67	0.67	0.66	1.06	1.62	1.14	1.39

Source	IN10				VI16_BGG				VI16_GK				3vBVAR				5vBVAR				8vBVAR				Models
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	Mean
Horizon	0	0.70	0.93		1.04	0.99			1.04	0.99			1.22	1.24			1.18	1.07			0.96	0.85			4.90
	1	0.76	0.76		1.13	0.85	1.14	0.87	1.09	0.82	1.12	0.82	1.06	0.97	1.05	0.97	1.11	0.98	1.05	0.97	1.11	1.04	1.09	1.01	6.02
	2	0.77	0.76		1.34	1.06	1.32	1.05	1.29	0.96	1.29	0.95	1.08	0.99	1.03	0.97	1.17	1.07	1.12	1.04	1.17	1.10	1.16	1.07	5.39
	3	0.78	0.82		2.06	1.75	2.01	1.73	1.88	1.51	1.86	1.49	1.22	1.17	1.15	1.10	1.51	1.43	1.47	1.31	1.48	1.37	1.52	1.29	2.93
	4	0.85	0.92		2.19	1.99	2.16	2.00	1.99	1.73	1.95	1.76	0.93	1.16	0.90	1.12	1.36	1.43	1.38	1.33	1.28	1.24	1.35	1.17	2.38

Source	DS04				WW11				FU20				GSW12				FRBEDO08				Fair	
	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC		
Horizon	0	1.14	-	1.38	-	1.35	-	1.51	-	0.88	-	0.89	-	1.19	-	2.05	-	1.01	-	1.43	-	1.64
	1	1.35	1.44	1.38	1.46	1.36	1.44	1.36	1.42	0.92	1.07	1.02	1.02	1.43	1.36	1.05	1.12	1.22	1.48	1.33	1.38	1.45
	2	1.22	1.23	1.31	1.16	1.23	1.26	1.32	1.18	0.99	1.00	1.03	0.94	1.07	1.19	1.10	1.07	1.22	1.21	1.28	1.16	0.99
	3	0.74	0.84	0.81	1.02	0.72	0.81	0.76	0.96	0.98	0.99	0.93	1.01	0.96	0.78	1.05	1.12	0.73	0.91	0.79	0.93	0.99
	4	0.75	0.68	0.77	0.68	0.75	0.67	0.77	0.66	1.11	1.03	1.11	1.00	1.43	1.26	1.45	1.24	0.77	0.67	0.77	0.69	0.97

Source	NKBGG				QPM08				DNGS15				KR15_FF				KR15_HH				
	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	
Horizon	0	0.83	-	0.99	-	1.06	-	1.32	-	1.12	-	1.68	-	1.12	-	2.08	-	1.12	-	1.14	-
	1	1.11	1.25	1.16	1.25	1.08	1.03	0.99	1.04	1.44	1.49	1.56	1.52	1.45	1.85	1.59	1.76	1.47	1.85	1.03	1.76
	2	1.02	1.11	1.08	1.02	1.11	1.29	1.17	1.10	1.26	1.30	1.45	1.29	1.15	1.12	1.34	1.10	1.11	0.91	1.35	1.18
	3	0.85	0.91	0.90	1.04	0.63	0.77	0.62	0.66	1.25	1.33	1.39	1.60	0.82	0.78	0.78	0.89	0.77	0.93	0.59	0.86
	4	0.98	0.89	1.02	0.89	0.87	0.83	0.92	0.84	1.18	1.06	1.27	1.08	0.90	0.82	0.97	0.83	1.18	0.97	0.82	0.70

Source	CMR14				IN10				3vBVAR				5vBVAR				8vBVAR				SW07				
	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	
Horizon	0	0.78	-	1.00	-	1.26	-	2.15	-	2.25	-	1.75	-	1.85	-	1.28	-	1.28	-	1.13	-	1.49	-	1.55	-
	1	1.24	1.44	1.32	1.45	1.89	-	1.88	-	1.64	1.65	1.73	1.65	1.70	1.74	1.72	1.70	1.40	1.43	1.50	1.52	2.08	2.00	2.10	2.10
	2	1.24	1.20	1.27	1.18	1.78	-	1.90	-	1.66	1.72	1.93	1.67	1.71	1.72	1.98	1.69	1.48	1.62	1.57	1.35	2.08	1.94	1.93	2.06
	3	1.09	1.23	1.18	1.42	1.91	-	1.81	-	0.95	0.99	1.06	1.16	0.93	1.00	1.04	1.18	0.82	0.97	0.83	1.02	2.25	2.06	2.21	1.87
	4	0.99	0.93	1.04	0.90	2.01	-	1.87	-	1.12	1.06	1.39	1.18	1.10	1.02	1.35	1.21	0.89	1.03	1.07	0.89	2.07	2.30	2.01	2.30

Source	DS04				WW11				FU20				GSW12				FRBEDO08				Fair	
	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC		
Horizon	0	1.20	-	1.32	-	1.35	-	1.40	-	1.36	-	1.04	-	1.07	-	0.82	-	1.42	-	0.91	-	1.08
	1	1.01	1.00	0.83	0.82	1.05	1.07	0.87	0.90	1.20	1.14	1.04	1.07	1.00	0.94	0.87	0.94	1.11	1.07	0.92	0.84	1.01
	2	0.98	1.04	0.87	0.92	0.97	1.06	0.87	0.93	1.13	1.14	1.03	1.05	0.90	0.87	0.79	0.85	1.05	1.12	1.02	0.85	1.04
	3	1.03	1.39	1.03	1.18	0.97	1.34	0.97	1.10	1.02	1.29	1.01	1.12	0.67	0.67	0.70	0.61	0.82	1.16	1.26	1.02	1.11
	4	0.76	1.02	1.59	1.97	0.69	0.93	1.45	1.73	0.64	0.88	1.11	1.24	1.01	1.32	1.44	1.77	0.78	0.89	1.93	1.86	0.76

Source	NKBGG				QPM08				DNGS15				KR15_FF				KR15_HH					
	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC		
Horizon	0	1.39	-	1.19	-	1.46	-	1.16	-	0.88	-	0.44	-	1.13	-	1.40	-	1.13	-	1.27	-	
	1	1.13	1.11	0.91	0.94	1.03	1.06	0.85	0.96	0.88	0.92	0.68	0.78	1.19	0.92	1.02	1.05	1.14	0.92	1.06	0.83	
	2	1.00	1.08	0.89	0.94	0.90	1.00	0.80	0.90	0.89	1.06	0.78	0.92	1.02	0.97	0.92	0.90	1.12	1.00	1.15	1.03	
	3	0.85	1.14	0.83	0.90	0.79	1.05	0.72	0.83	1.17	1.82	1.17	1.43	0.80	1.05	0.82	0.78	0.96	1.51	1.32	1.23	
	4	0.68	0.86	1.32	1.43	0.97	1.13	1.90	1.93	1.26	1.66	2.55	2.97	0.64	0.87	1.32	1.45	1.07	2.10	2.25	3.04	

Source	CMR14				IN10				3vBVAR				5vBVAR				8vBVAR				SW07				
	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	
Horizon	0	1.16	-	0.69	-	0.85	-	0.95	-	1.47	-	1.27	-	1.42	-	1.09	-	1.16	-	0.87	-	4.07	-	4.78	-
	1	1.09	1.02	0.81	0.87	0.76	-	0.65	-	1.06	1.03	0.89	0.92	1.11	1.04	0.89	0.93	1.10	1.10	0.92	0.97	6.03	5.68	7.09	6.30
	2	1.17	1.16	1.00	1.00	0.78	-	0.68	-	1.08	1.10	0.93	0.95	1.17	1.19	1.01	1.01	1.18	1.22	1.05	1.04	5.36	4.87	5.98	5.52
	3	1.28	1.63	1.27	1.33	0.87	-	0.89	-	1.36	1.74	1.25	1.29	1.69	2.13	1.60	1.53	1.66	2.04	1.66	1.51	2.62	1.97	2.69	2.51
	4	0.72	0.92	1.68	1.90	0.85	-	1.81	-	0.94	1.50	1.77	2.45	1.37	1.85	2.71	2.92	1.29	1.62	2.65	2.57	2.37	1.83	1.21	1.09