

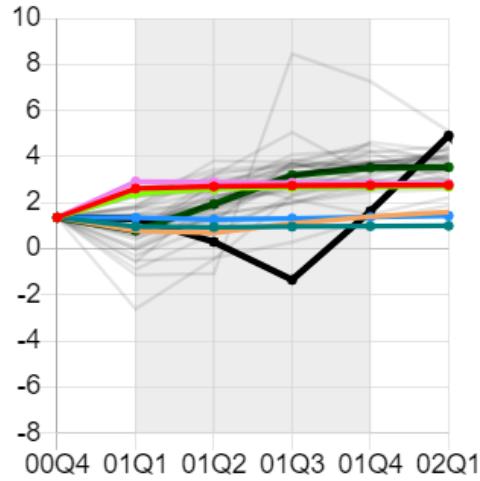
# **A comparison of the US GDP growth forecast results**

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

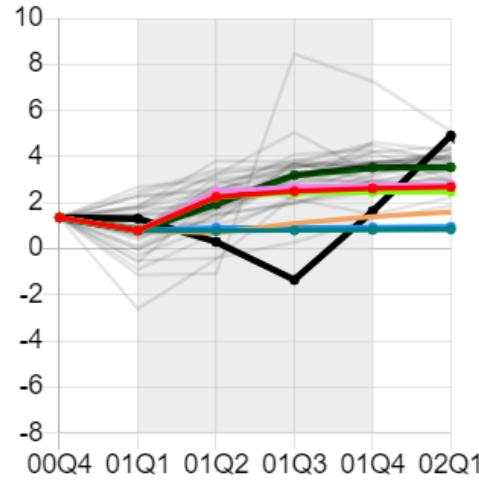
- Comparison of forecasts in 2001:I – 2001:IV
- Pre-crisis models

DS04 FRBEDO08 FU20 Fair SW07 WW11 SPFIndividual SPFMean Actual

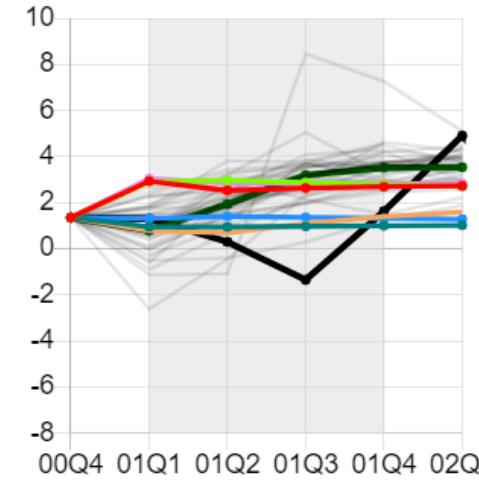
Balanced panel



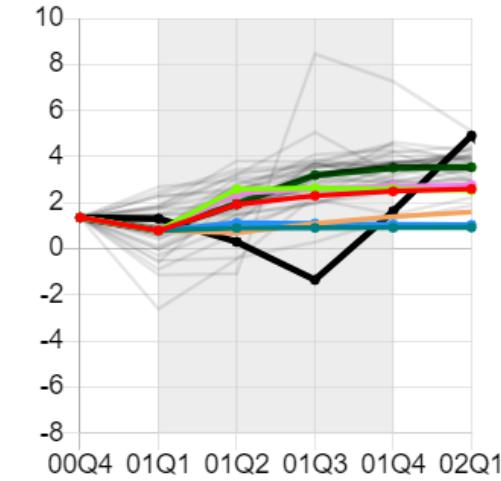
Conditioning on SPF nowcast



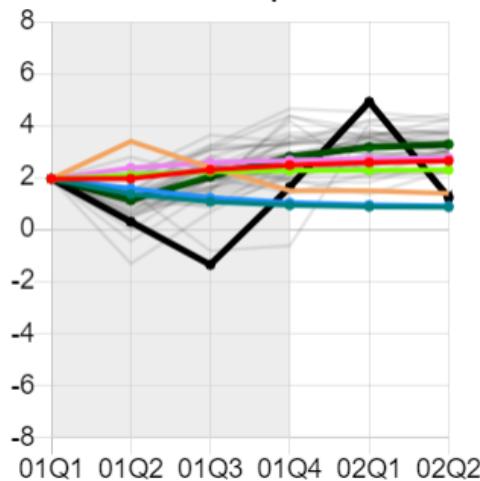
Conditioning on current-quarter observations



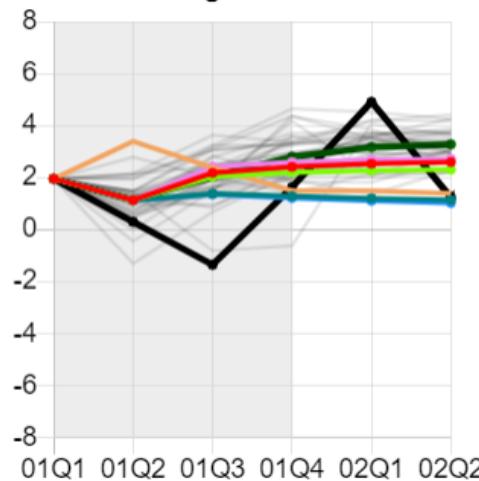
Full conditioning



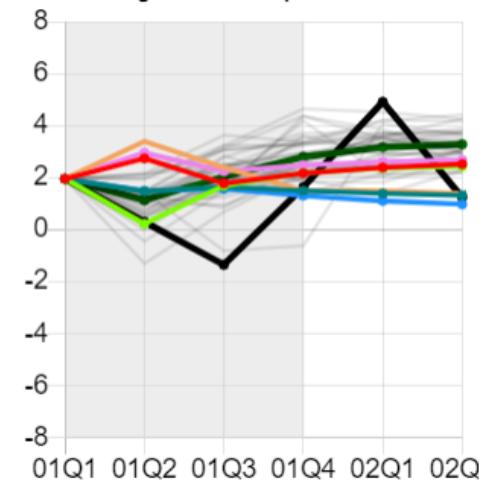
Balanced panel



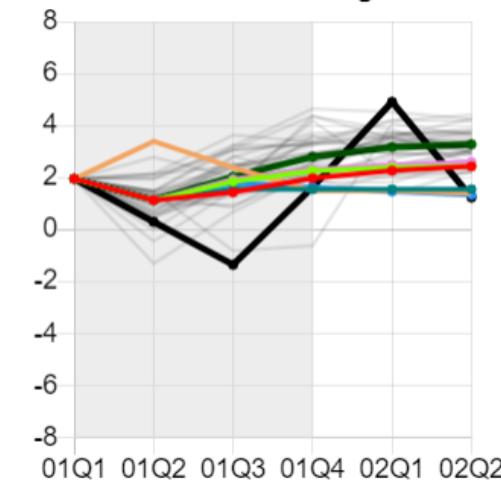
Conditioning on SPF nowcast



Conditioning on current-quarter observations



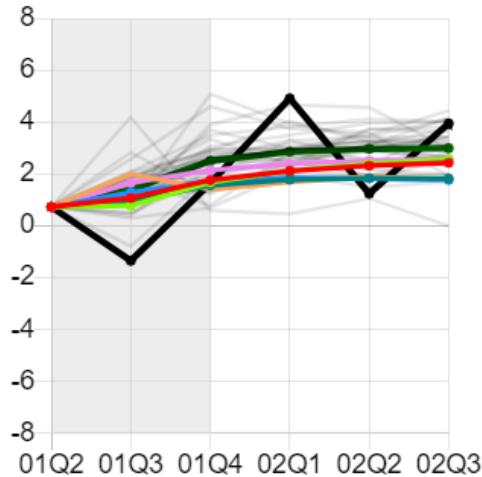
Full conditioning



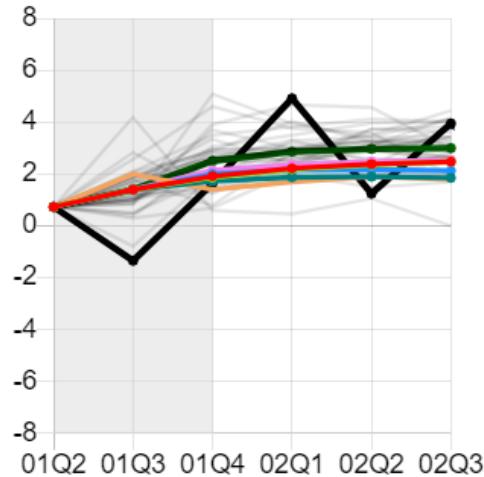
DS04 FRBEDO08 FU20 Fair SW07 WW11 SPFIndividual SPFMean Actual

### Forecast start 2001Q3

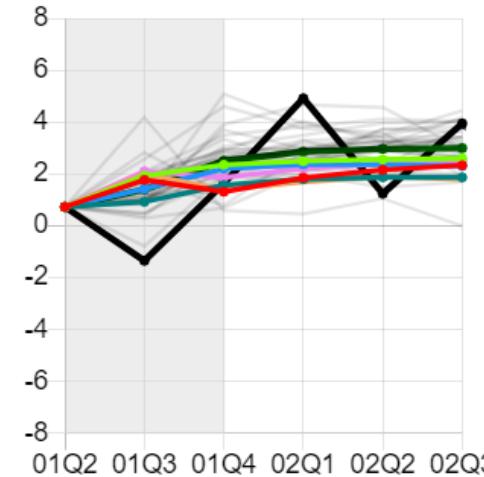
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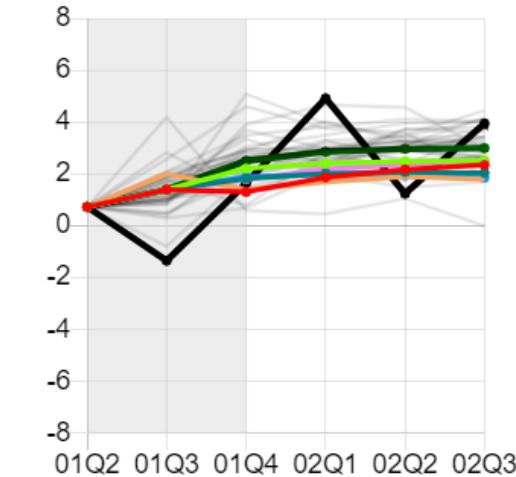
Conditioning on SPF nowcast



Conditioning on current-quarter observations

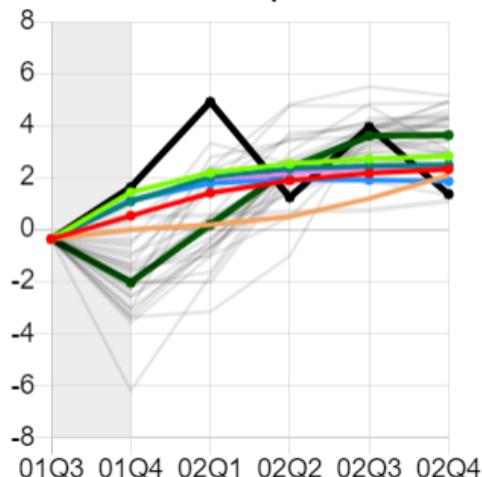


Full conditioning

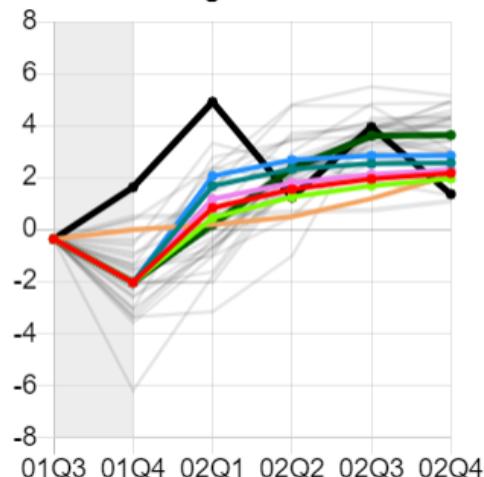


### Forecast start 2001Q4

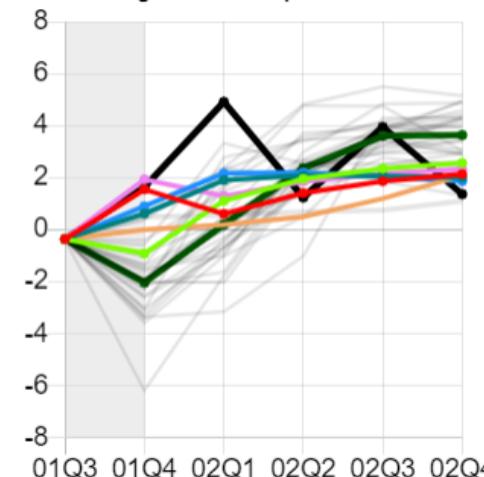
Balanced panel



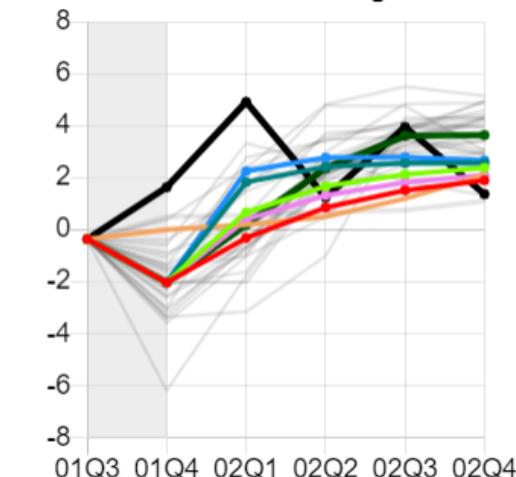
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning

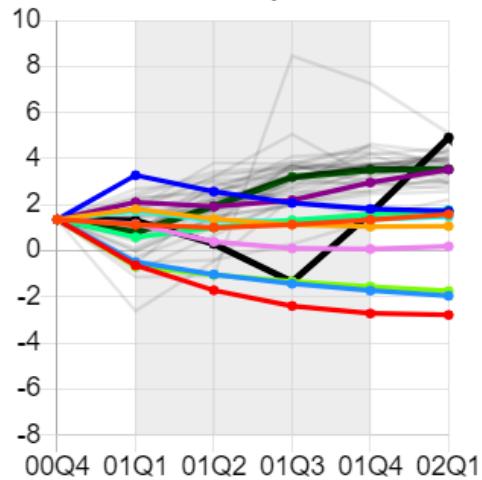


- Comparison of forecasts in 2001:I – 2001:IV
- Post-crisis models

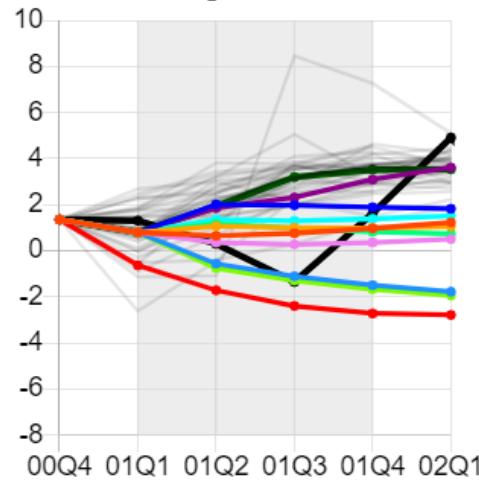


Forecast start 2001Q1

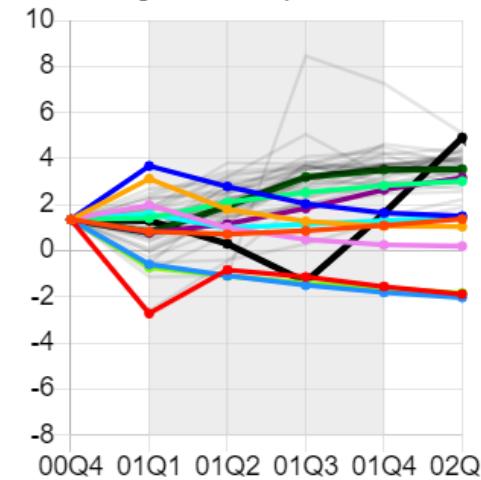
## Balanced panel



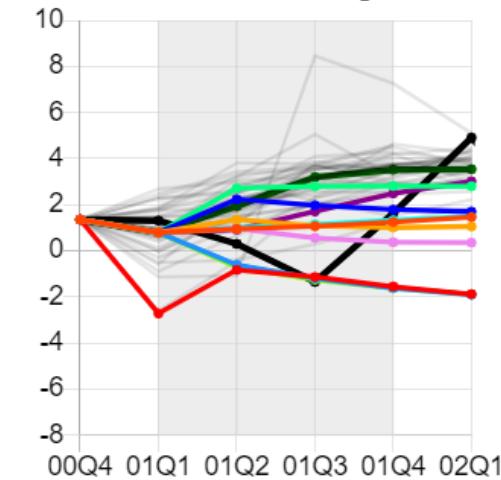
## Conditioning on SPF nowcast



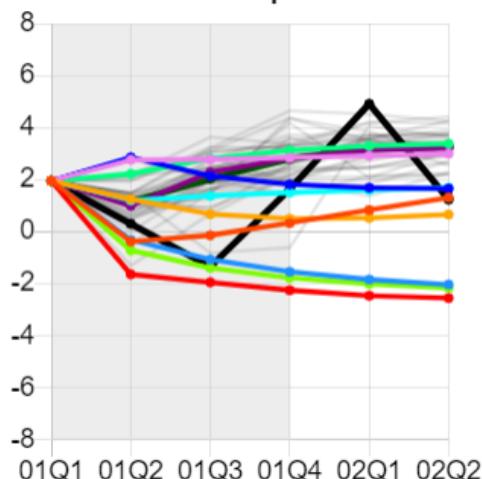
### Conditioning on current-quarter observations



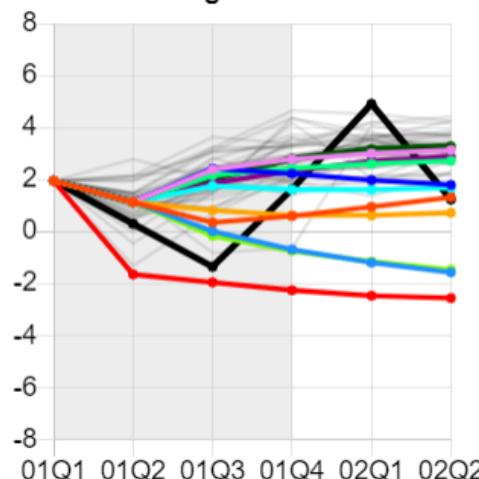
### Full conditioning



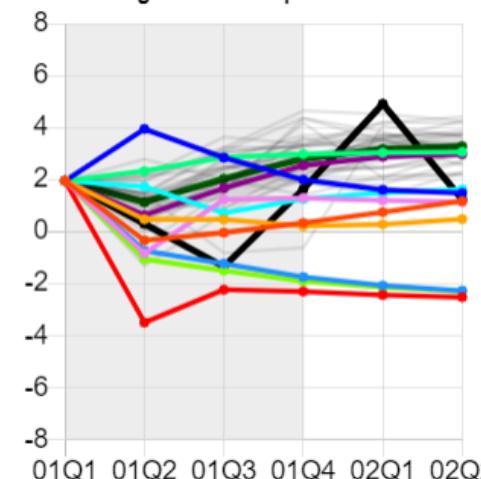
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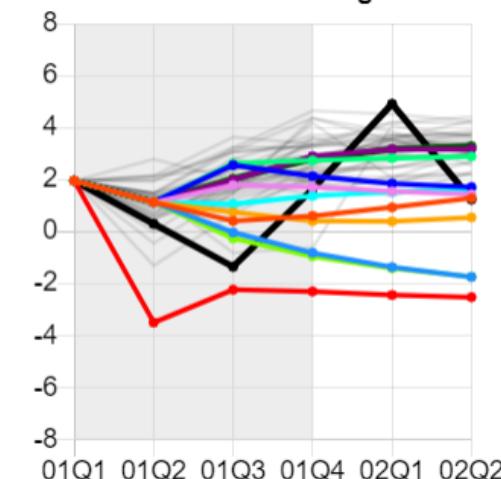
## Conditioning on SPF nowcast



### Conditioning on current-quarter observations

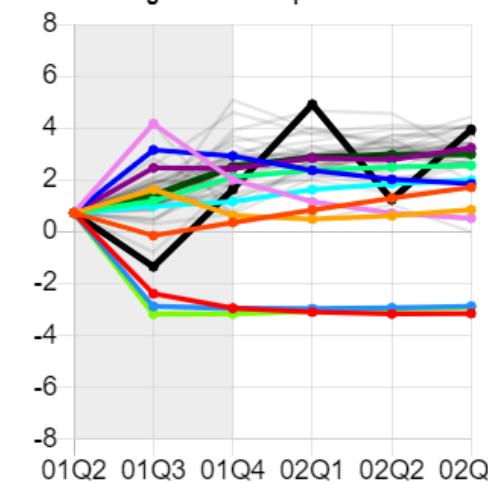
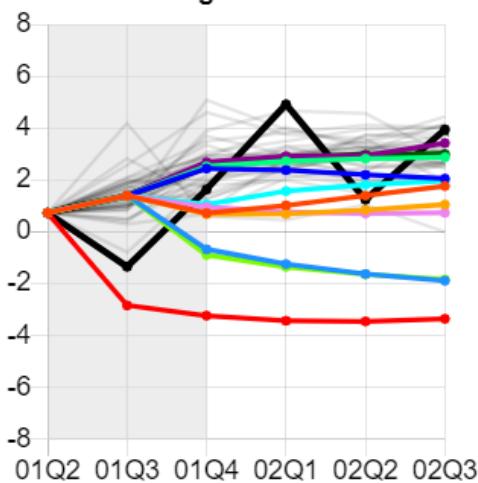
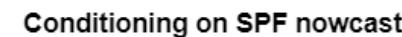
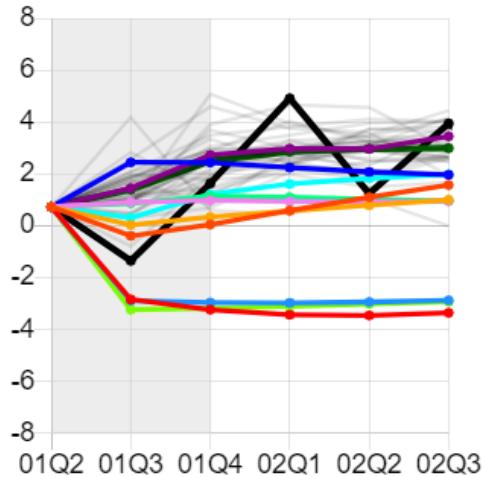


### Full conditioning

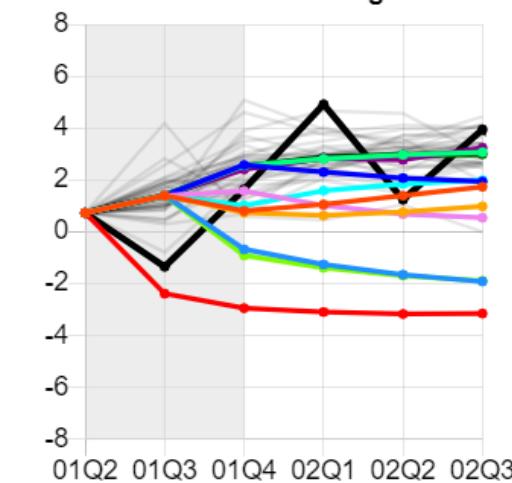




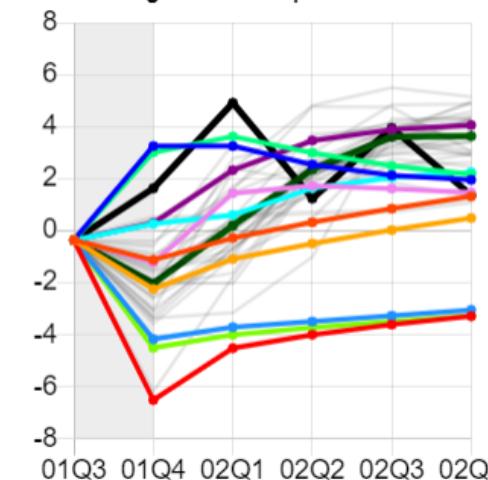
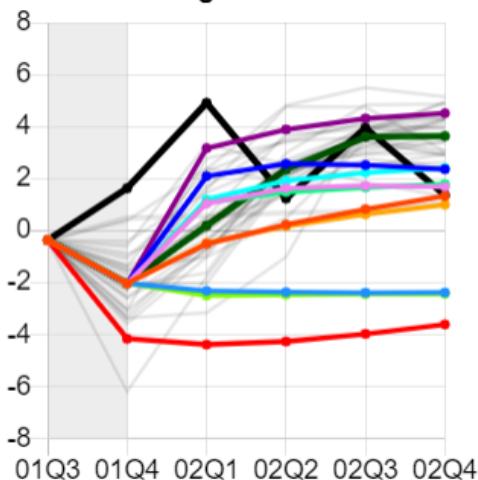
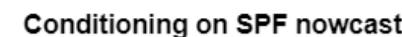
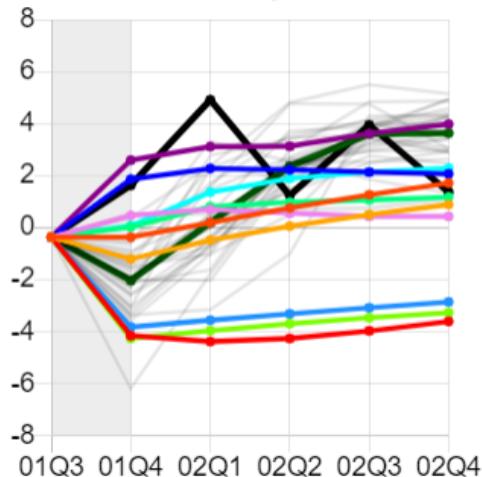
Forecast start 2001Q3



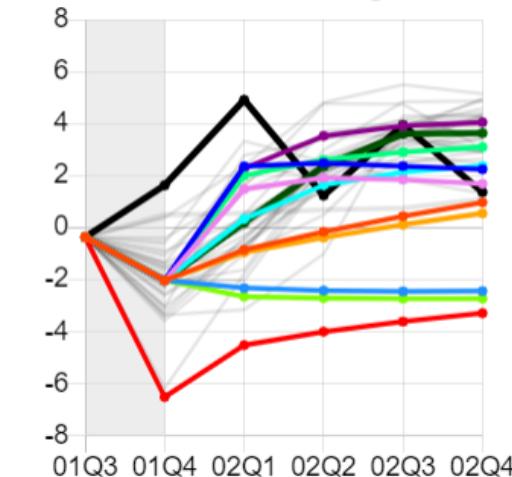
## Full conditioning



### Balanced panel



### Full conditioning

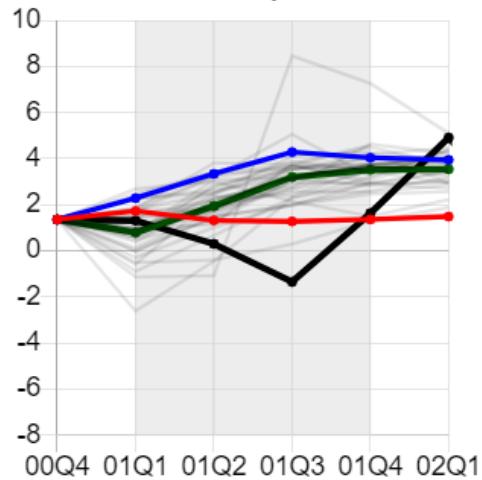


- Comparison of forecasts in 2001:I – 2001:IV
- Structural models versus time-series models

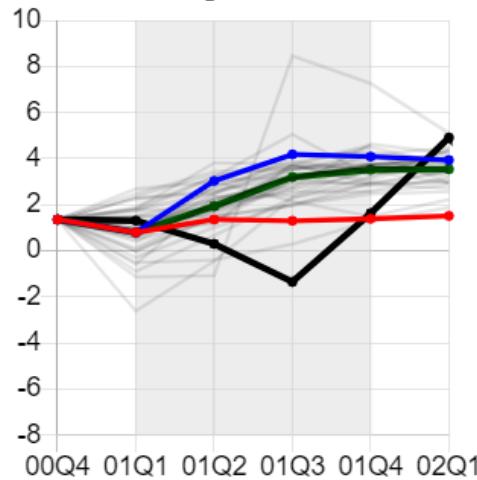
■ NKBGG ■ GLP5v ■ SPFIndividual ■ SPFMean ■ Actual

### Forecast start 2001Q1

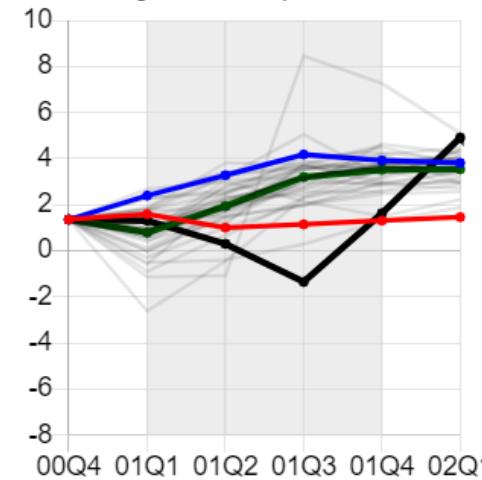
Balanced panel



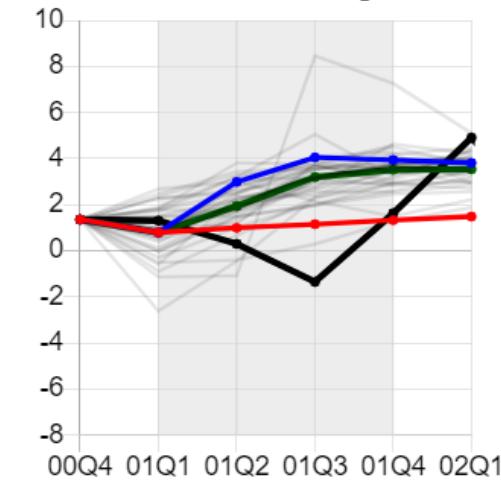
Conditioning on SPF nowcast



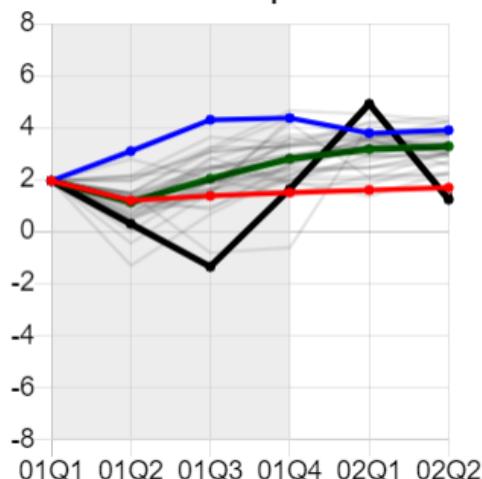
Conditioning on current-quarter observations



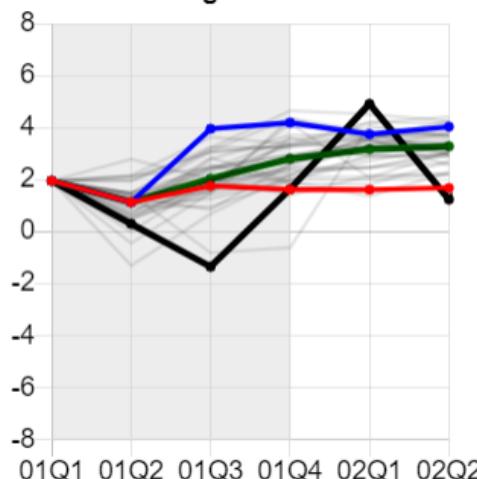
Full conditioning



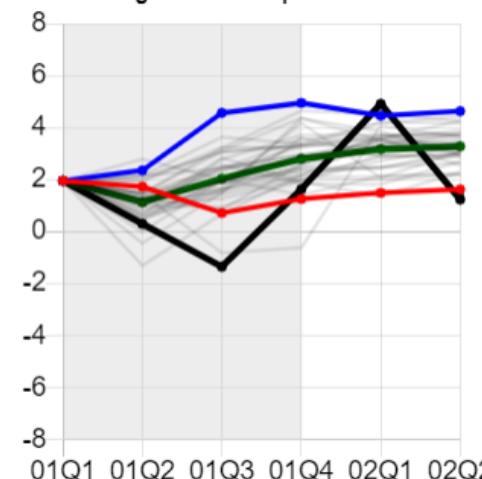
Balanced panel



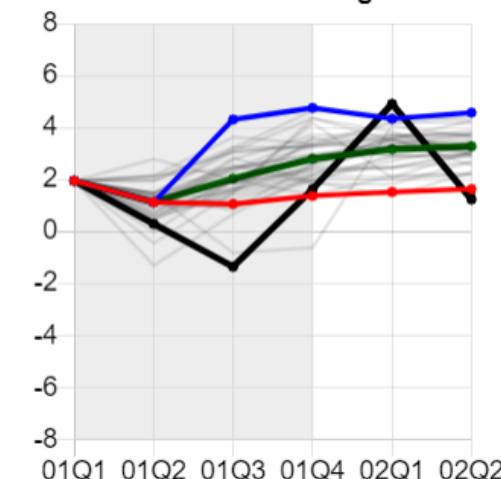
Conditioning on SPF nowcast



Conditioning on current-quarter observations



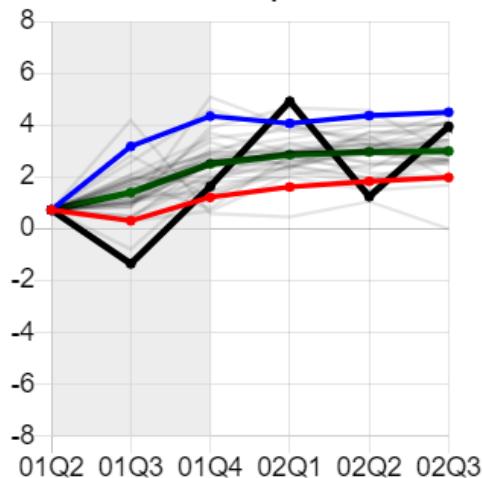
Full conditioning



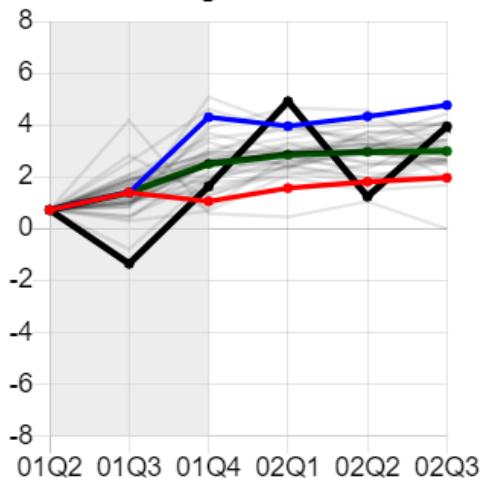
■ NKBGG ■ GLP5v ■ SPFIndividual ■ SPFMean ■ Actual

### Forecast start 2001Q3

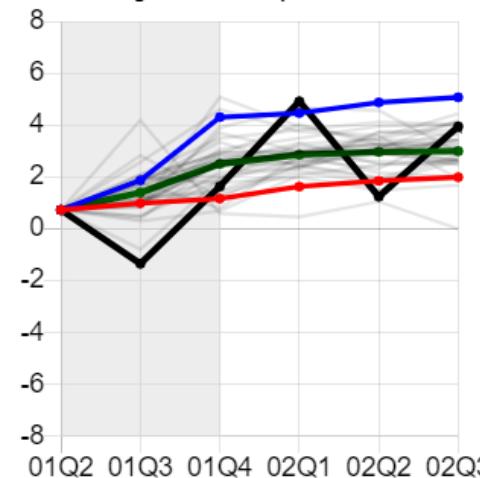
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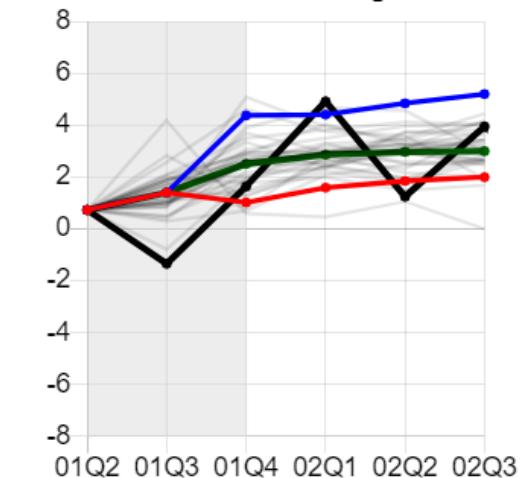
Conditioning on SPF nowcast



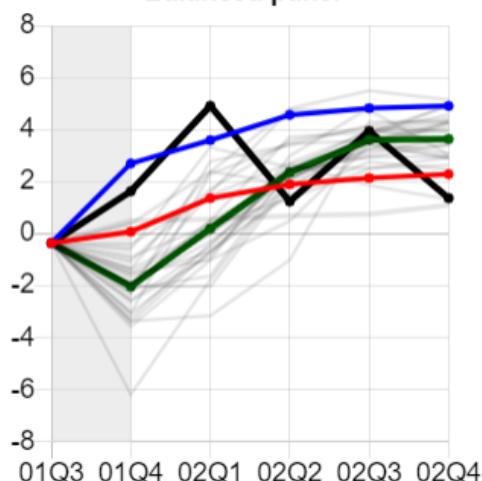
Conditioning on current-quarter observations



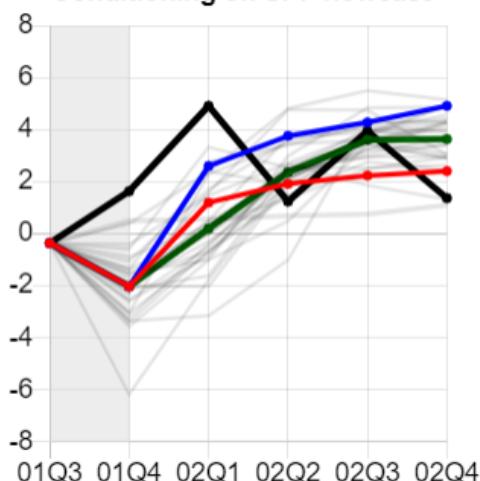
Full conditioning



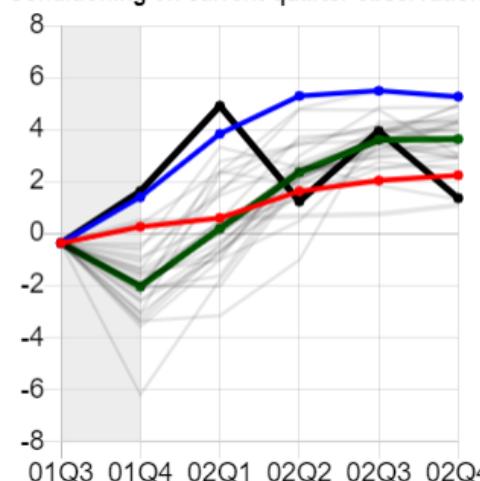
Balanced panel



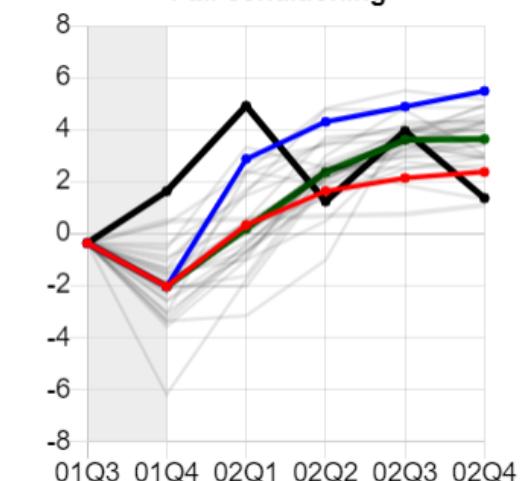
Conditioning on SPF nowcast



Conditioning on current-quarter observations

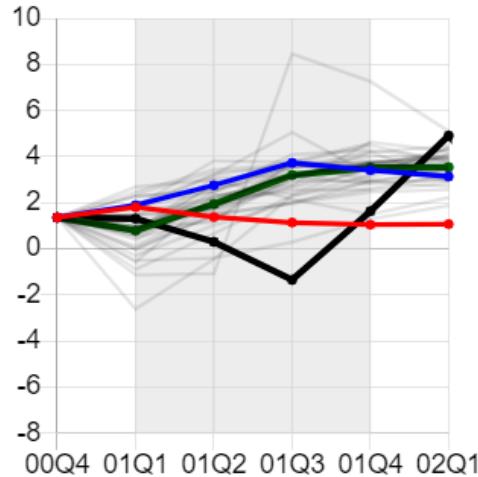


Full conditioning



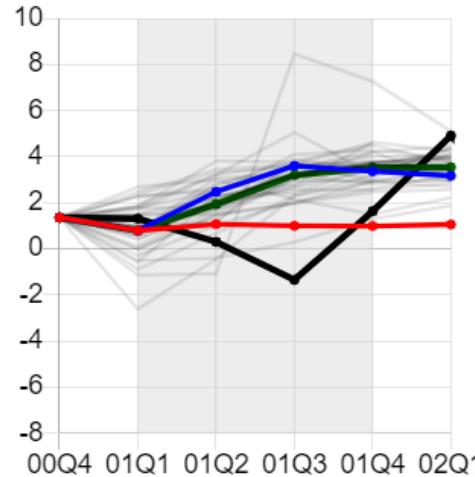
DNGS15 GLP8v SPFIndividual SPFMean Actual

Balanced panel

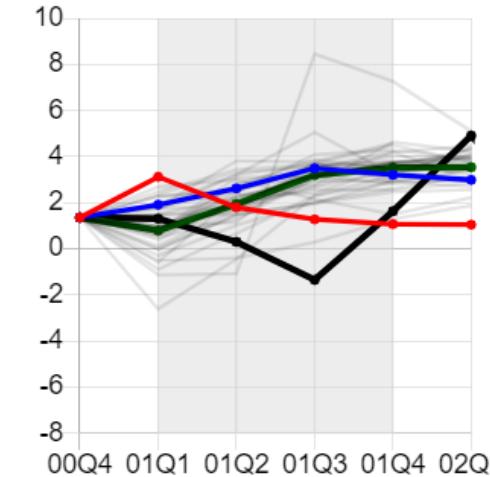


Forecast start 2001Q1

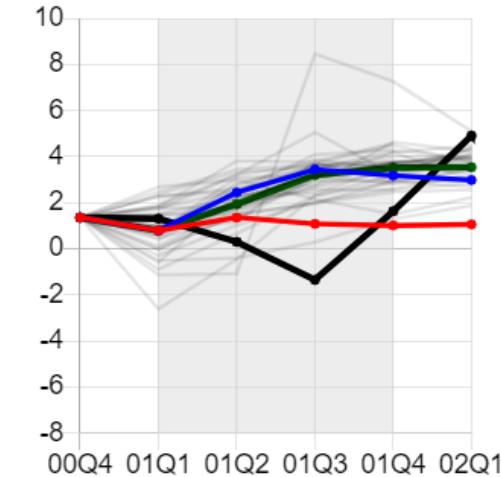
Conditioning on SPF nowcast



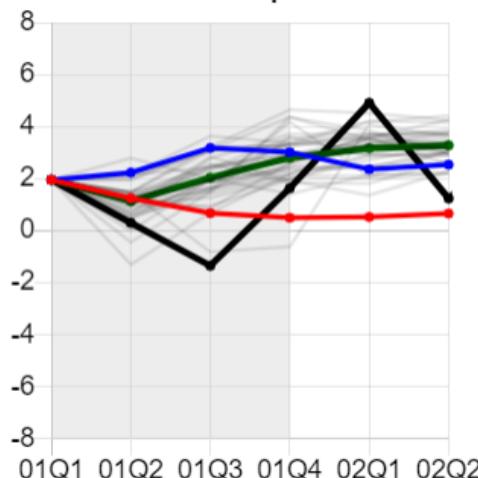
Conditioning on current-quarter observations



Full conditioning

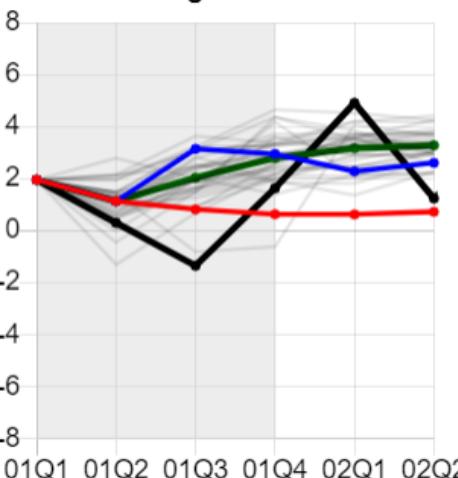


Balanced panel

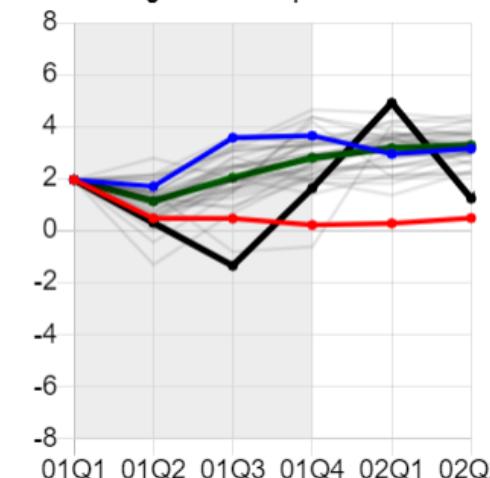


Forecast start 2001Q2

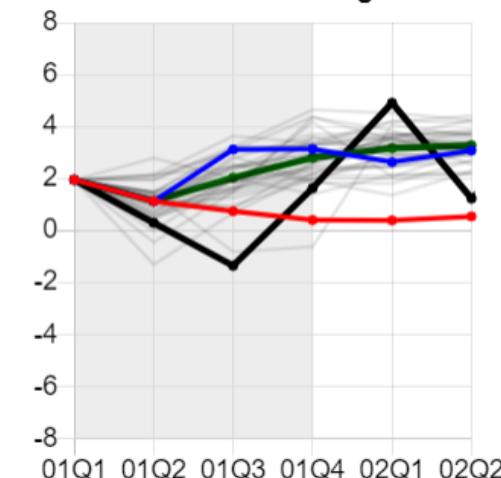
Conditioning on SPF nowcast



Conditioning on current-quarter observations



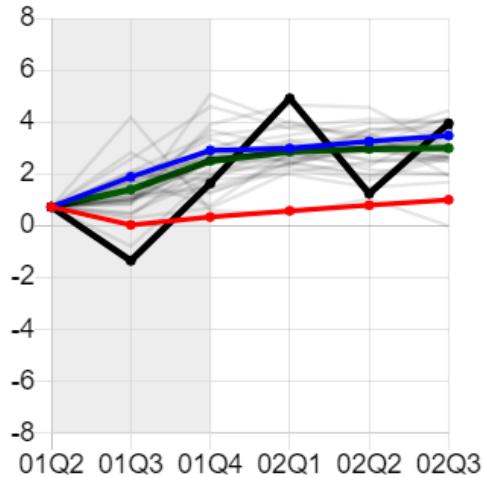
Full conditioning



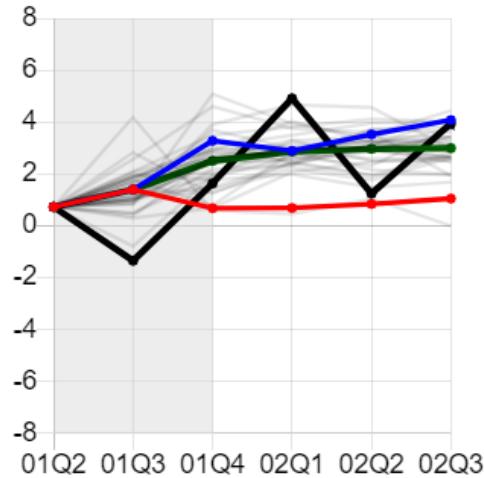
DNGS15 GLP8v SPFIndividual SPFMean Actual

### Forecast start 2001Q3

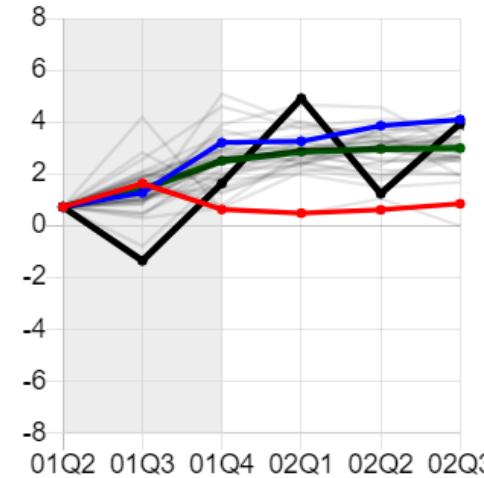
Balanced panel



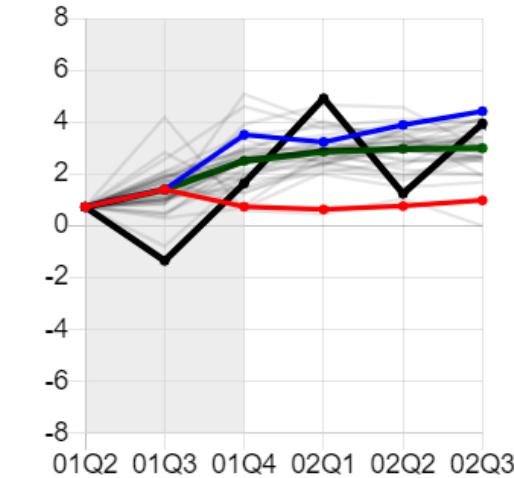
Conditioning on SPF nowcast



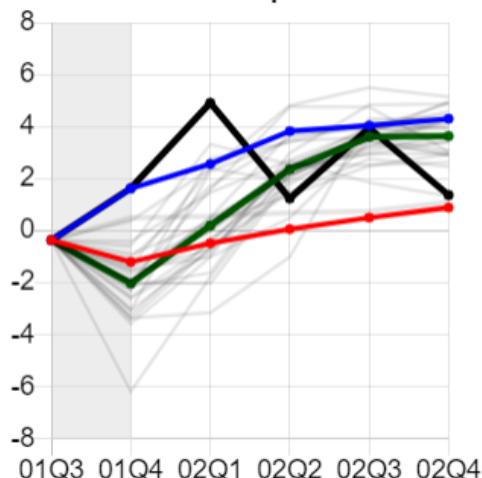
Conditioning on current-quarter observations



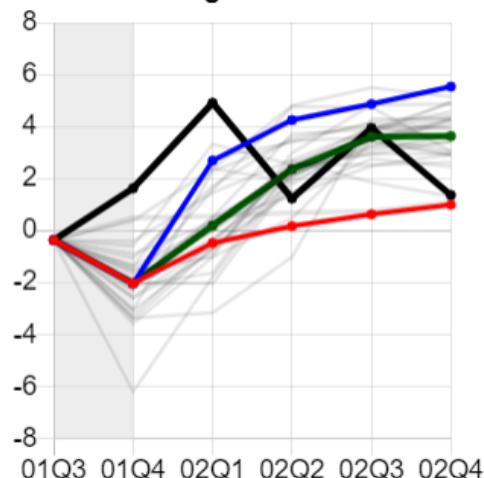
Full conditioning



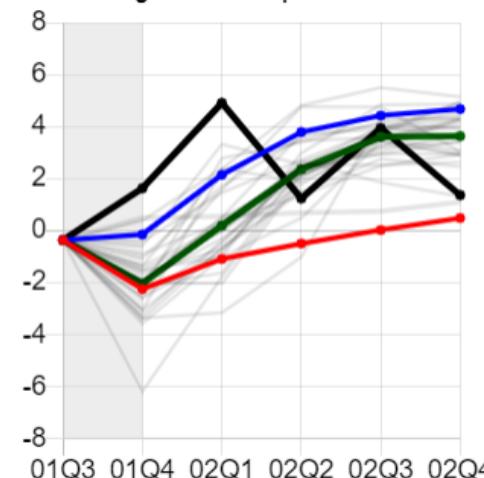
Balanced panel



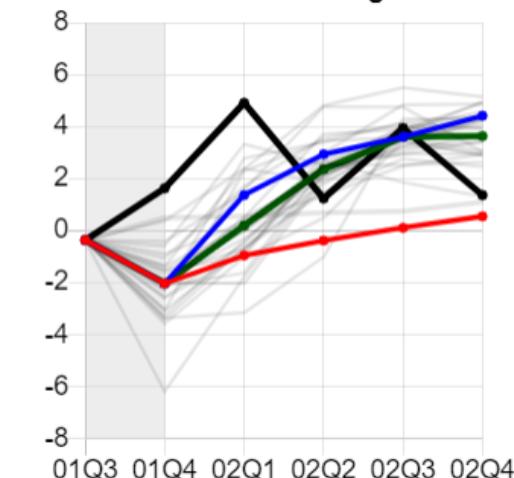
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning



- **Comparison of relative\* RMSEs in 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	DS04				WW11				SW07				FU20				FRBEDO08				NKBGG				
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC													
Horizon	0	0.72	0.91	0.91	0.86	1.00	0.64	0.66	0.56	0.59	0.64	0.95	0.53	0.66	0.53	0.66	0.53	0.66	0.53	0.66	0.53	0.66	0.53	0.66	
	1	0.92	0.94	0.95	1.01	0.93	0.95	0.94	0.98	0.68	0.66	0.69	0.69	0.63	0.70	0.70	0.70	0.83	0.97	0.92	0.96	0.76	0.82	0.80	0.86
	2	0.97	0.91	0.96	0.91	0.97	0.93	0.97	0.93	0.79	0.74	0.74	0.78	0.78	0.74	0.76	0.74	0.97	0.89	0.94	0.91	0.81	0.82	0.79	0.80
	3	1.07	1.11	1.14	1.22	1.04	1.07	1.08	1.15	1.45	1.33	1.42	1.20	1.41	1.32	1.32	1.22	1.06	1.20	1.12	1.12	1.23	1.21	1.28	1.25
	4	0.90	0.89	0.89	0.89	0.89	0.89	0.88	0.87	1.19	1.32	1.15	1.32	1.32	1.36	1.28	1.32	0.91	0.89	0.89	0.91	1.17	1.17	1.17	1.17

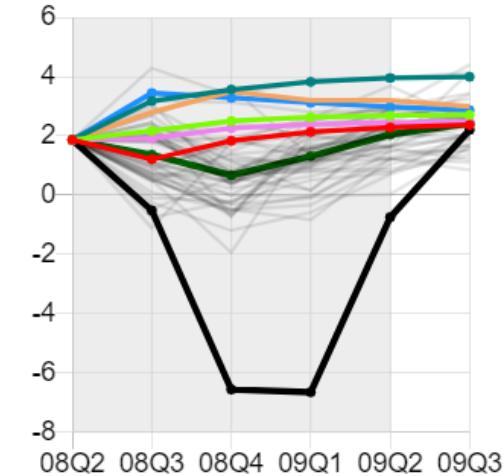
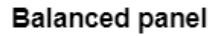
Source	CMR14				DNGS15				KR15_HH				KR15_FF				VI16_BGG				VI16_GK				
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	
Horizon	0	0.50	0.66	0.66	0.71	1.11	0.71	0.76	0.71	1.38	1.38	1.28	1.36	1.41	1.46	1.41	1.46	1.41	1.46	1.41	1.46	1.41	1.46	1.41	1.46
	1	0.85	0.95	0.91	1.00	0.99	0.97	1.07	1.05	1.00	1.21	0.71	1.21	0.99	1.21	1.10	1.21	1.60	1.27	1.62	1.27	1.67	1.31	1.68	1.33
	2	0.99	0.89	0.93	0.93	1.00	0.96	1.07	1.02	0.88	0.67	0.99	0.93	0.91	0.83	0.98	0.86	1.84	1.43	1.87	1.45	1.91	1.46	1.92	1.50
	3	1.57	1.63	1.68	1.71	1.81	1.76	1.97	1.92	1.12	1.24	0.83	1.03	1.19	1.04	1.11	1.07	3.58	3.14	3.67	3.20	3.68	3.16	3.72	3.28
	4	1.18	1.23	1.20	1.18	1.41	1.40	1.46	1.43	1.41	1.28	0.95	0.92	1.07	1.08	1.12	1.10	3.18	2.88	3.23	2.93	3.21	2.90	3.23	2.96

Source	QPM08				IN10				GSW12				3vBVAR				5vBVAR				8vBVAR				Fair	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				
Horizon	0	0.67	0.87	0.87	1.41	1.41	2.12	2.12	0.76	1.36	1.43	1.16	1.18	0.85	0.85	0.75	1.04	2.34	0.81	0.75	1.04	2.34	0.95	0.94	1.03	1.05	0.99	3.05
	1	0.74	0.67	0.68	0.72	1.76	1.76	1.74	1.74	0.97	0.89	0.72	0.77	1.12	1.08	1.19	1.14	1.16	1.14	1.19	1.17	1.18	1.20	1.16	1.06	0.78	2.62	
	2	0.88	0.95	0.86	0.86	2.05	2.05	1.97	1.97	0.85	0.88	0.81	0.84	1.31	1.27	1.42	1.31	1.36	1.27	1.45	1.33	1.18	1.20	1.16	1.06	0.78	2.62	
	3	0.91	1.02	0.88	0.80	4.04	4.04	3.82	3.82	1.40	1.04	1.49	1.35	1.38	1.32	1.50	1.39	1.35	1.33	1.48	1.42	1.19	1.29	1.18	1.23	1.43	1.55	
	4	1.03	1.10	1.07	1.11	3.54	3.54	3.31	3.31	1.70	1.66	1.67	1.64	1.34	1.41	1.61	1.55	1.31	1.35	1.55	1.60	1.06	1.36	1.23	1.17	1.16	1.74	

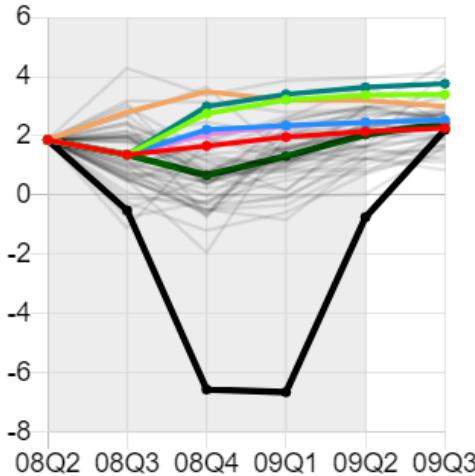
- Comparison of forecasts in 2008:III – 2009:II
- Pre-crisis models



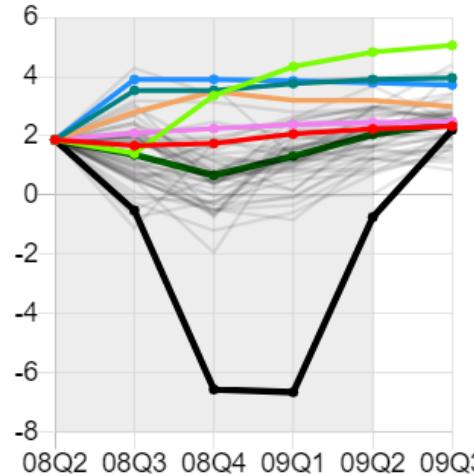
## Forecast start 2008Q3



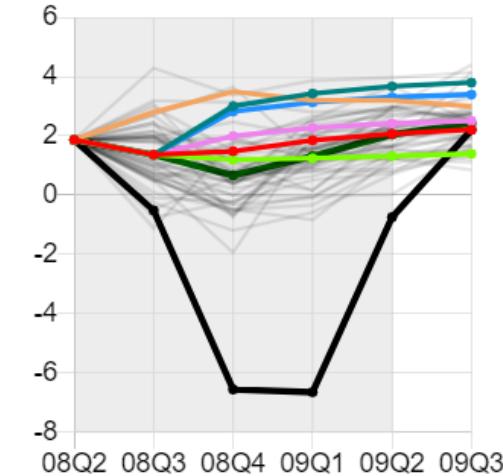
## Conditioning on SPF nowcast



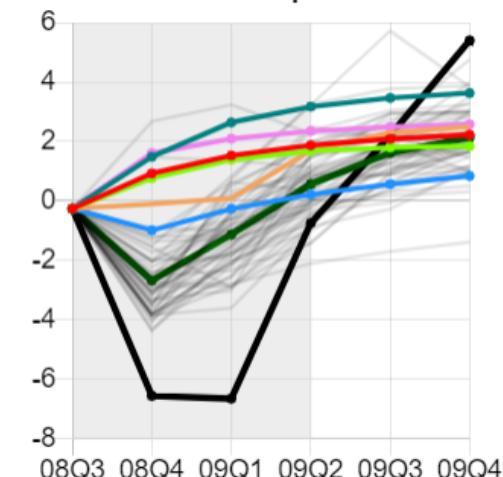
### Conditioning on current-quarter observations



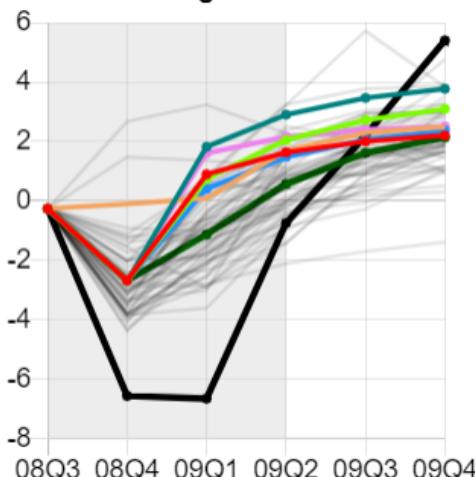
## Full conditioning



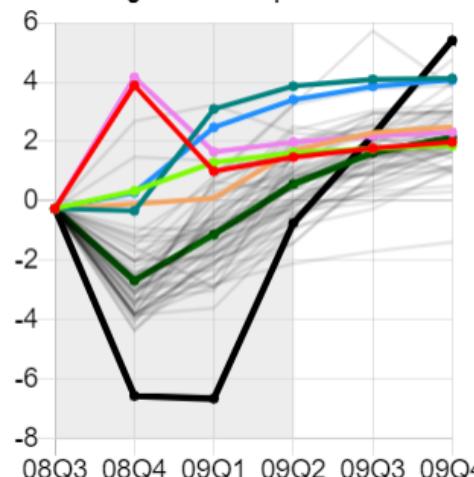
## Balanced panel



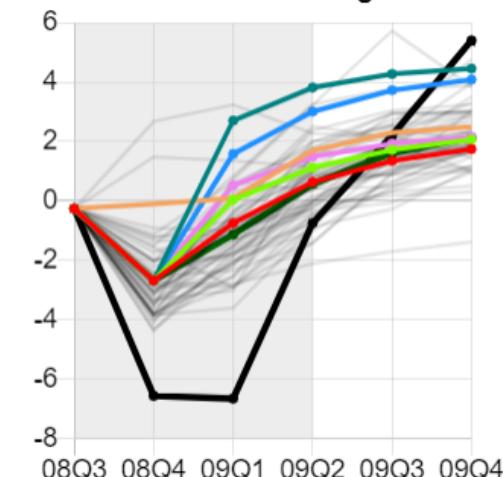
## Conditioning on SPF nowcast



### Conditioning on current-quarter observations



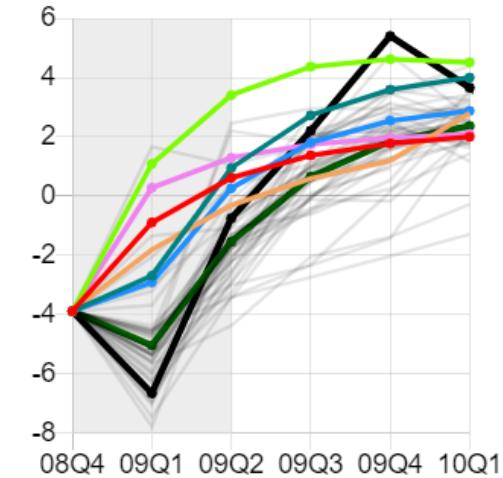
### Full conditioning



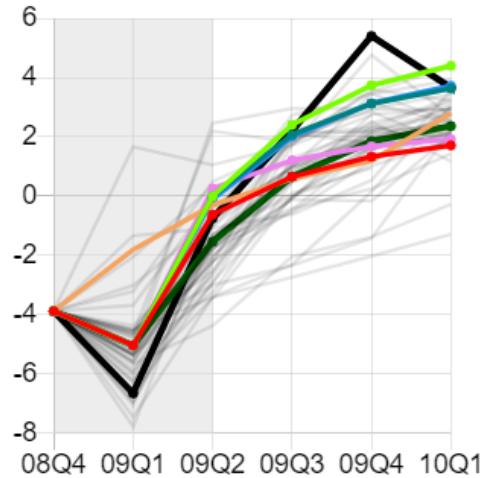
DS04 FRBEDO08 FU20 Fair SW07 WW11 SPFIndividual SPFMean Actual

### Forecast start 2009Q1

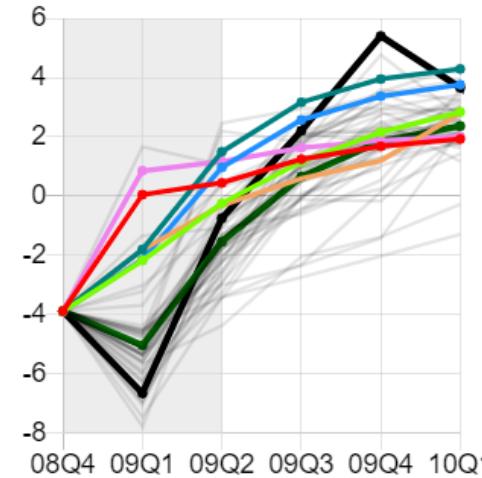
Balanced panel



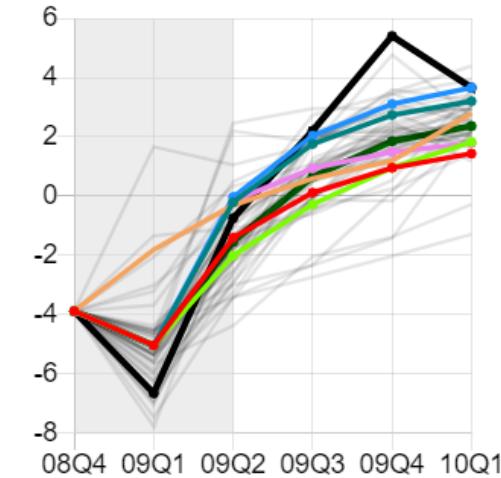
Conditioning on SPF nowcast



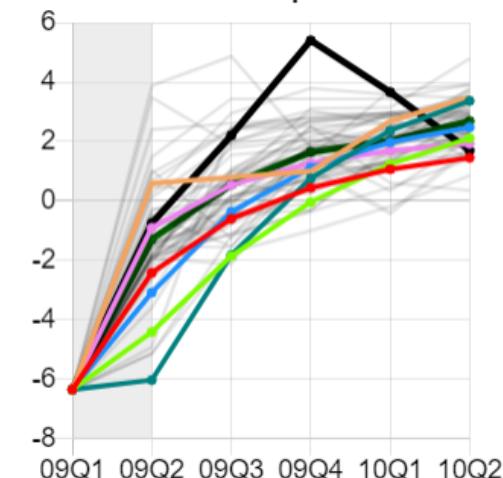
Conditioning on current-quarter observations



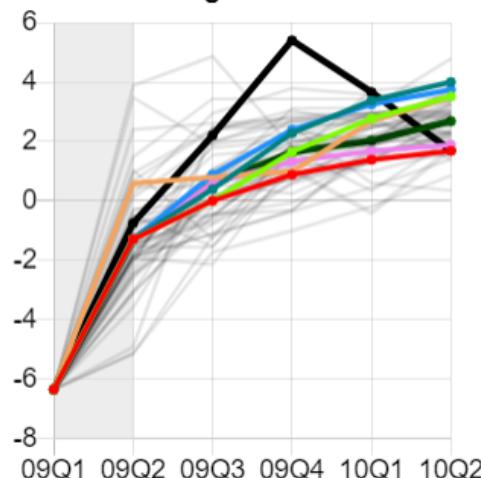
Full conditioning



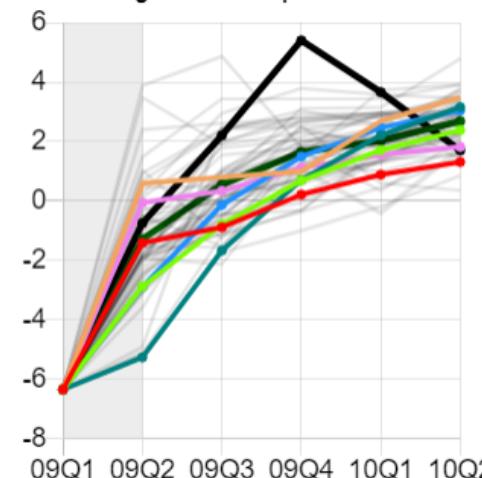
Balanced panel



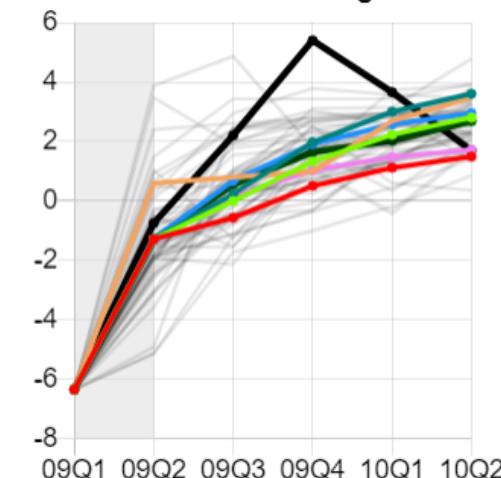
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning

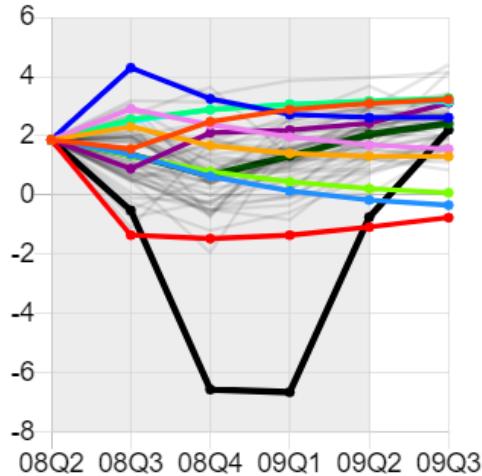


- Comparison of forecasts in 2008:III – 2009:II
- Post-crisis models

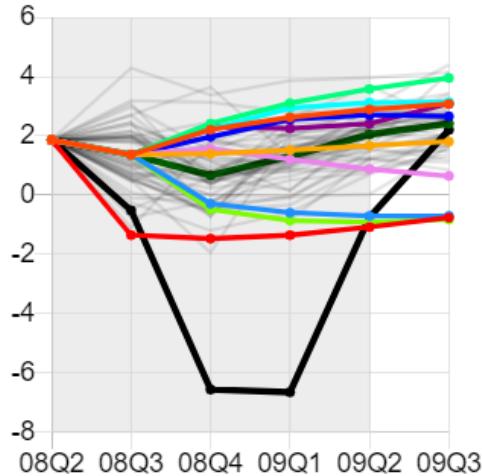


Forecast start 2008Q3

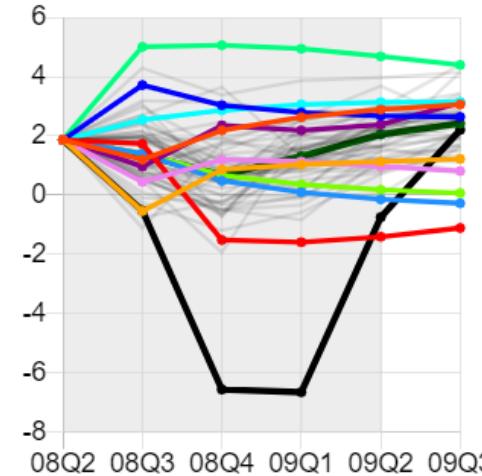
### Balanced panel



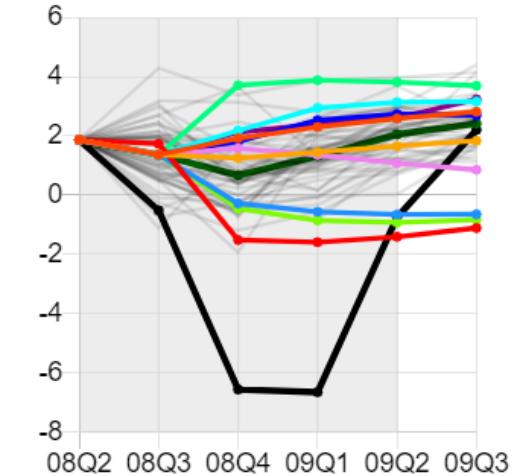
## Conditioning on SPF nowcast



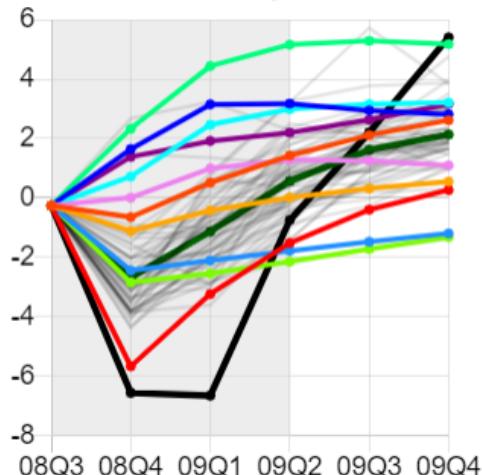
### Conditioning on current-quarter observations



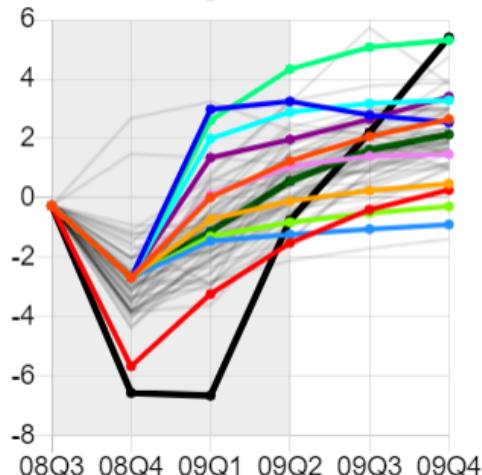
### Full conditioning



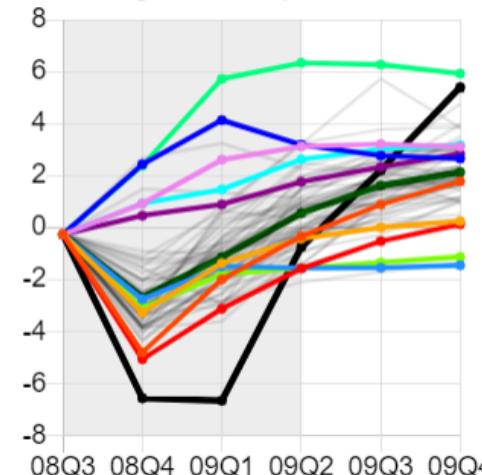
### Balanced panel



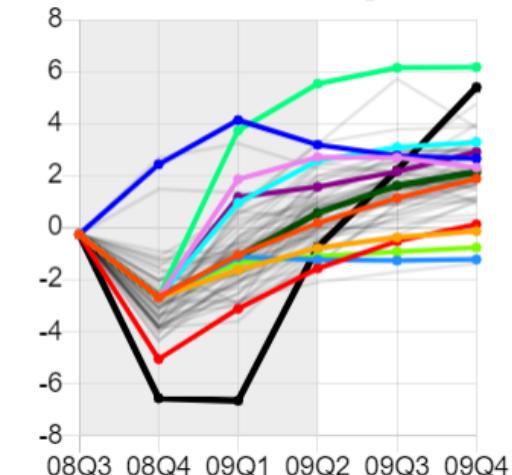
## Conditioning on SPF nowcast

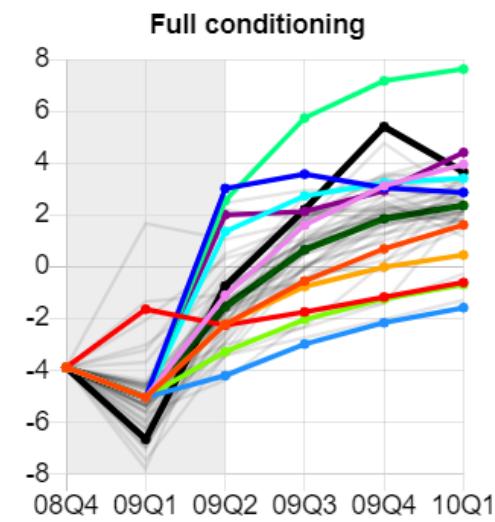
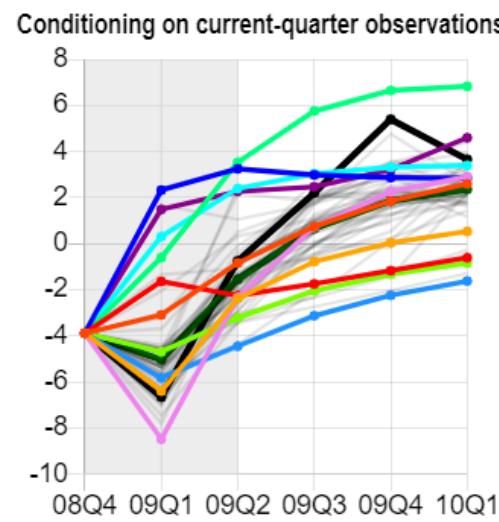
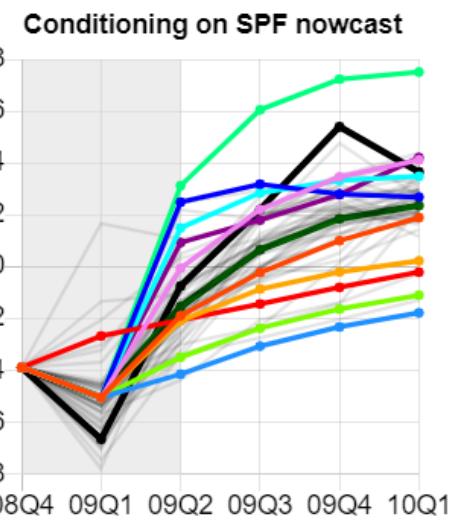
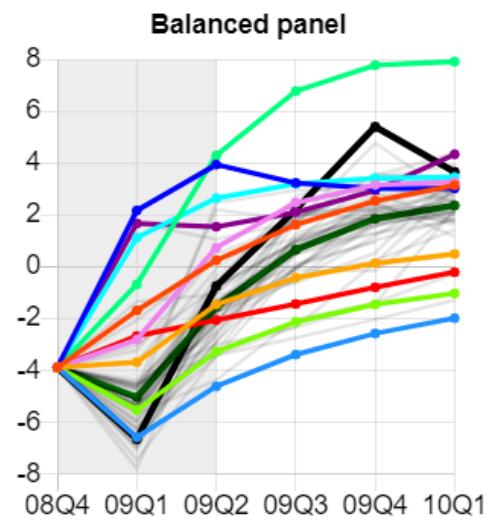


### Conditioning on current-quarter observations

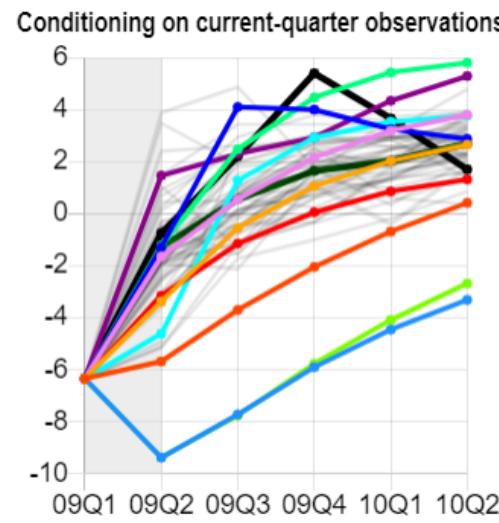
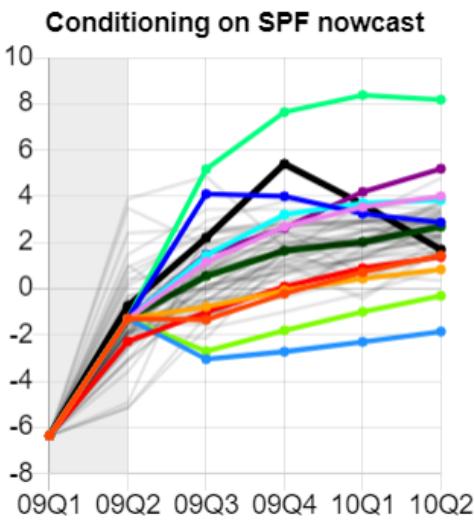
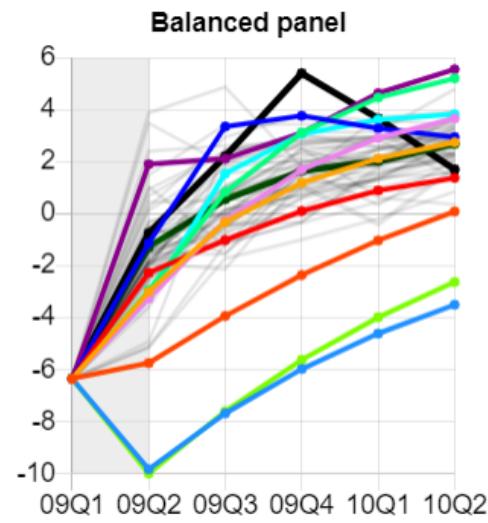


## Full conditioning





Forecast start 2009Q2



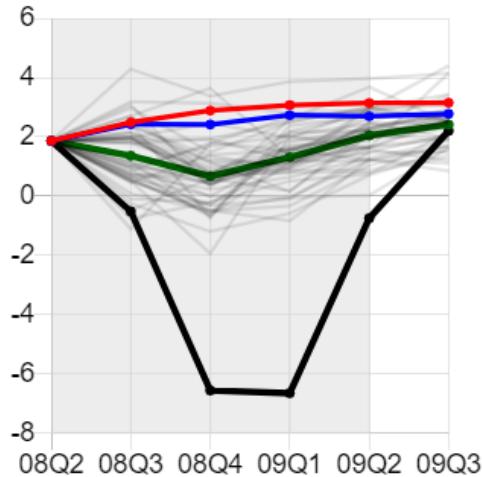
## Full conditioning

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

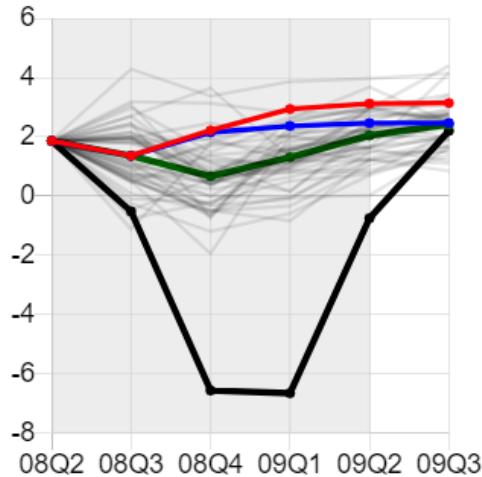
NKBGG GLP5v SPFIndividual SPFMean Actual

### Forecast start 2008Q3

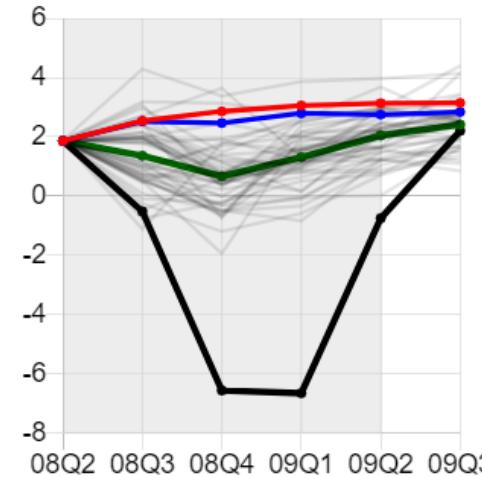
Balanced panel



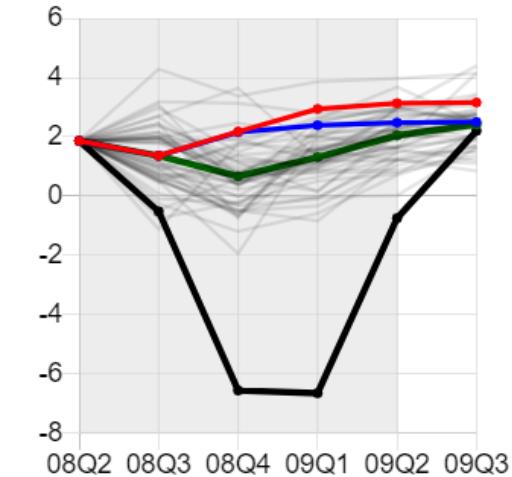
Conditioning on SPF nowcast



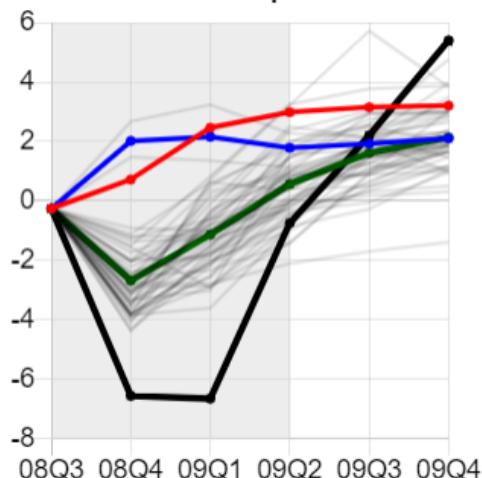
Conditioning on current-quarter observations



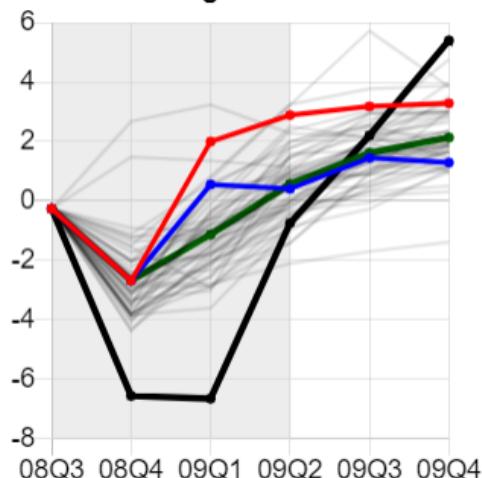
Full conditioning



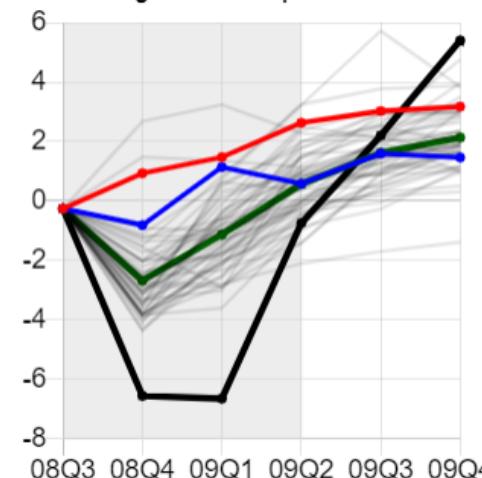
Balanced panel



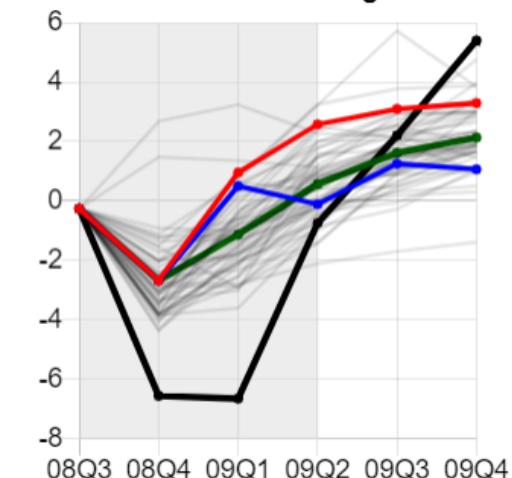
Conditioning on SPF nowcast



Conditioning on current-quarter observations



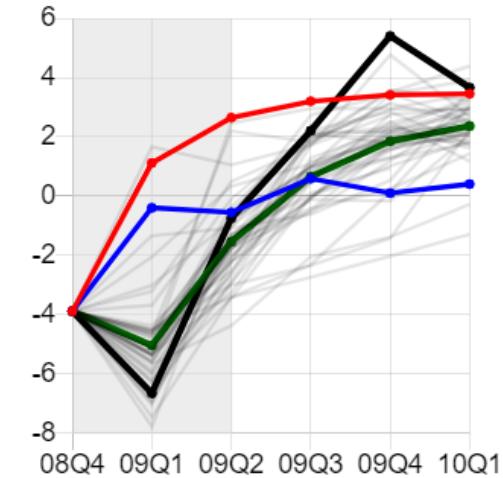
Full conditioning



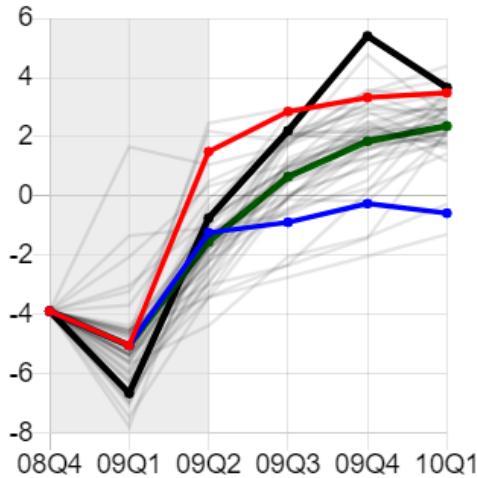
NKBGG GLP5v SPFIndividual SPFMean Actual

### Forecast start 2009Q1

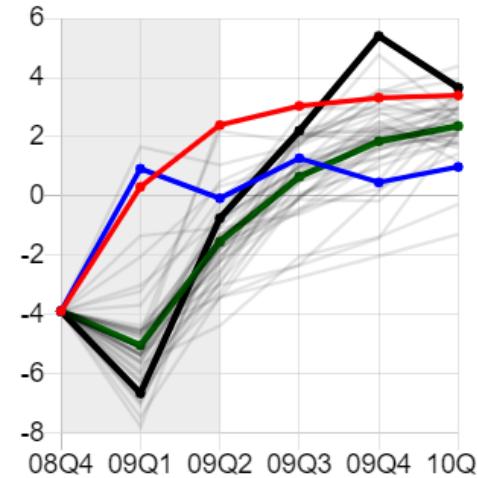
Balanced panel



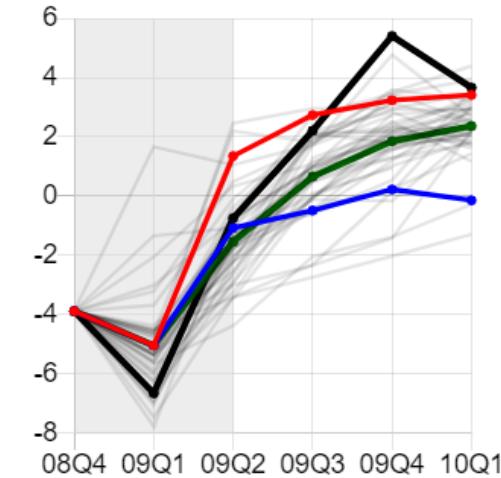
Conditioning on SPF nowcast



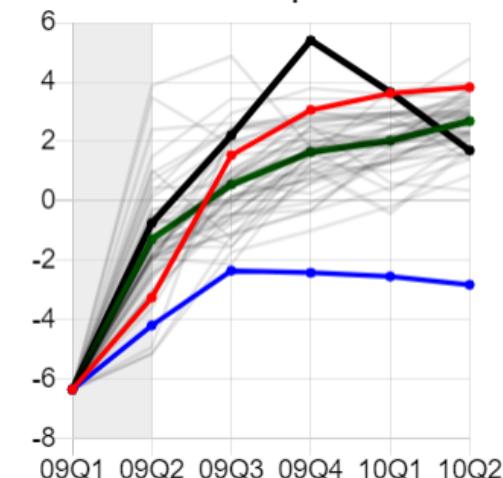
Conditioning on current-quarter observations



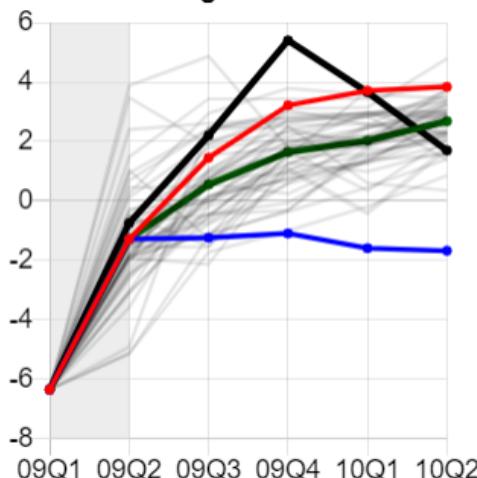
Full conditioning



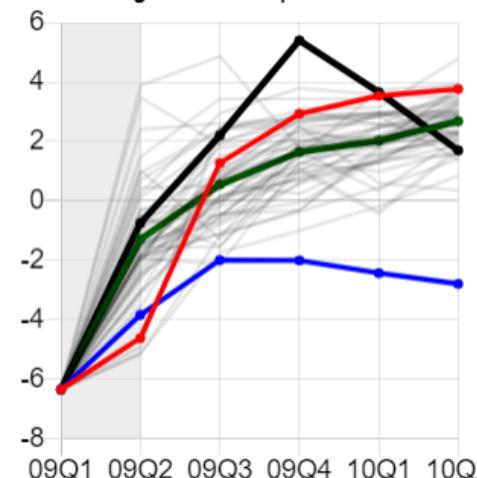
Balanced panel



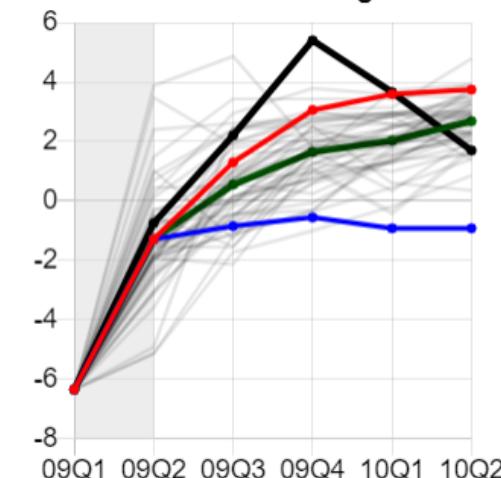
Conditioning on SPF nowcast



Conditioning on current-quarter observations



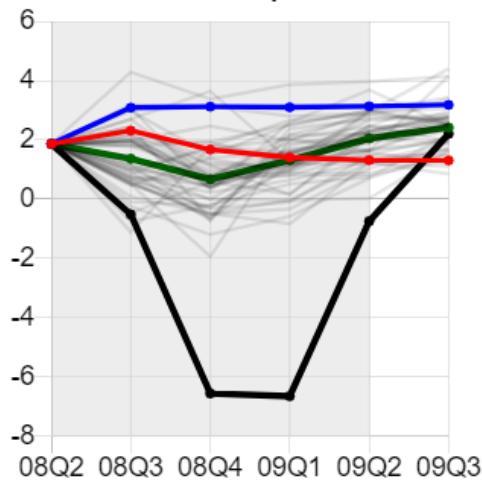
Full conditioning



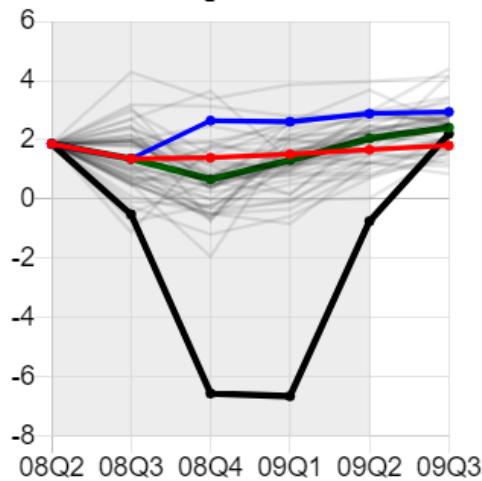
DNGS15 GLP8v SPFIndividual SPFMean Actual

### Forecast start 2008Q3

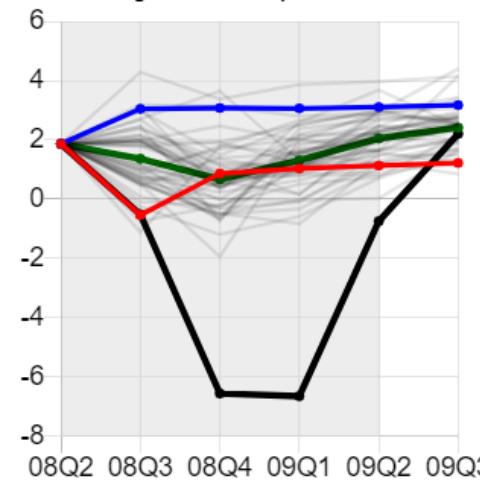
Balanced panel



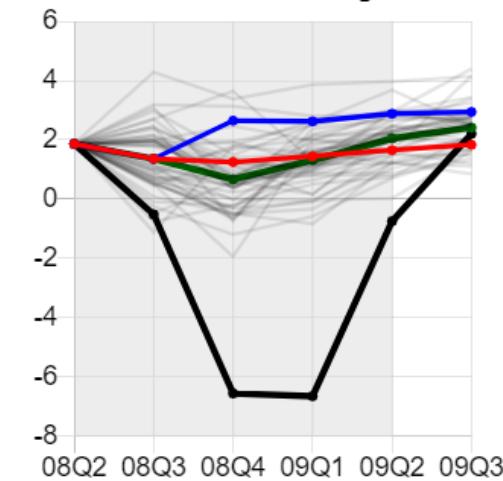
Conditioning on SPF nowcast



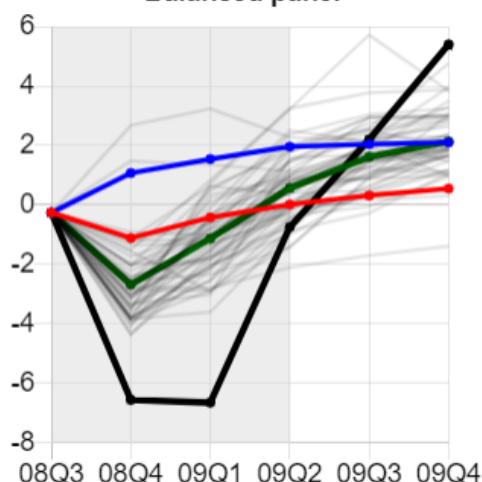
Conditioning on current-quarter observations



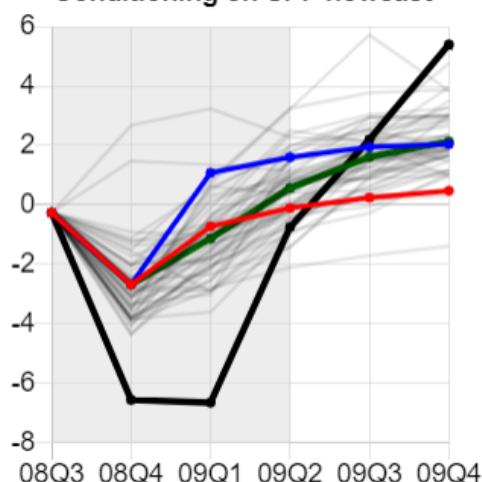
Full conditioning



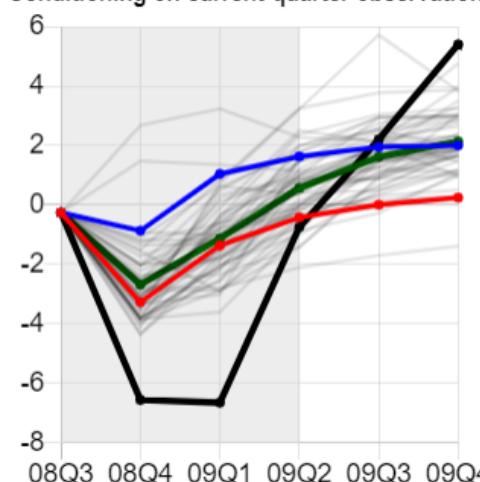
Balanced panel



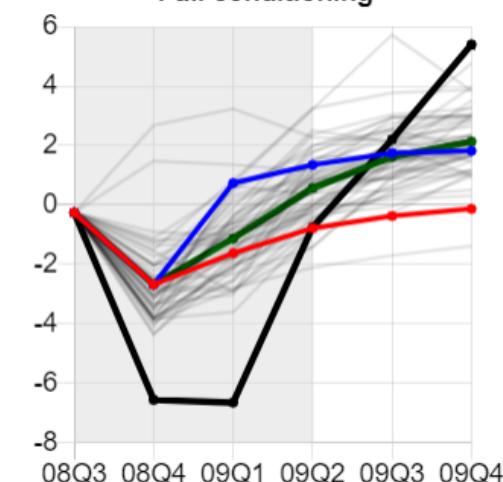
Conditioning on SPF nowcast



Conditioning on current-quarter observations



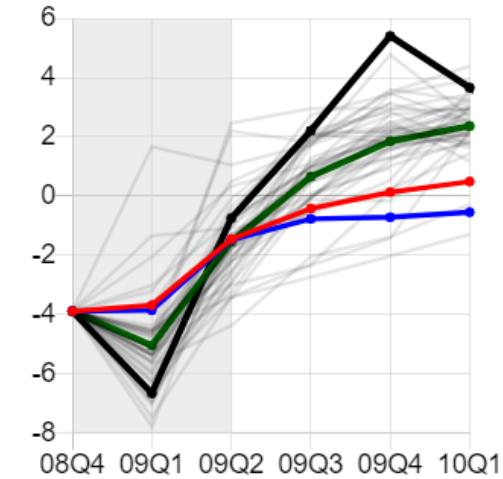
Full conditioning



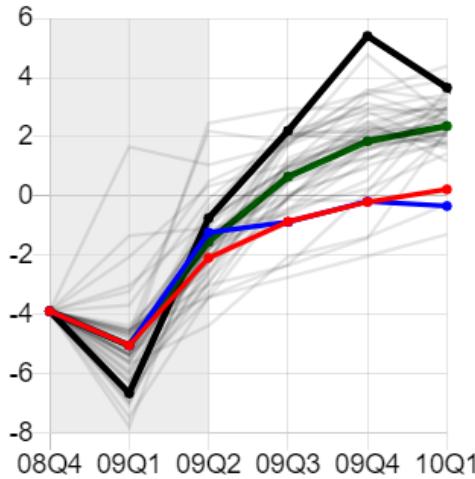
DNGS15 GLP8v SPFIndividual SPFMean Actual

### Forecast start 2009Q1

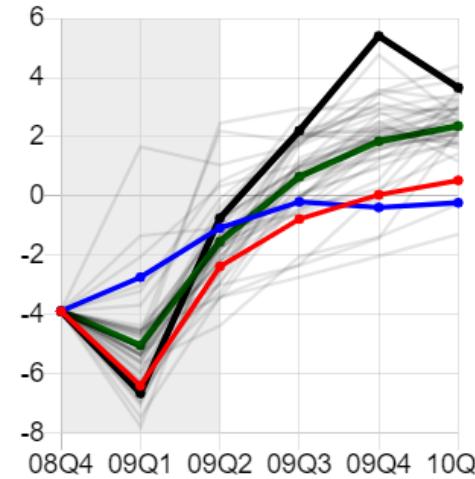
Balanced panel



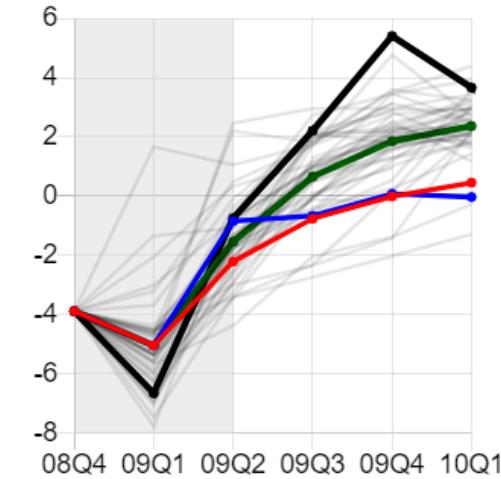
Conditioning on SPF nowcast



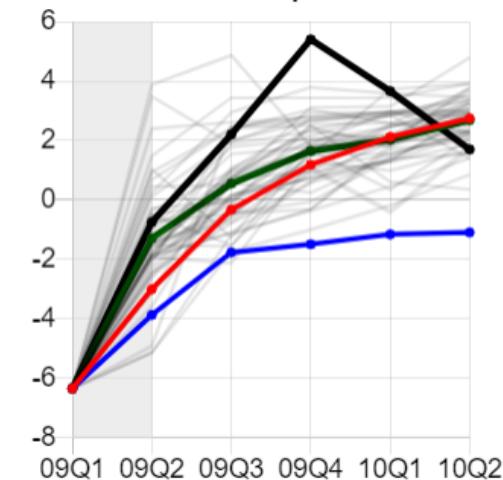
Conditioning on current-quarter observations



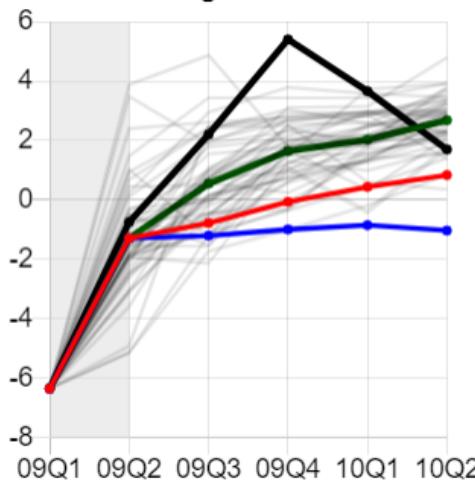
Full conditioning



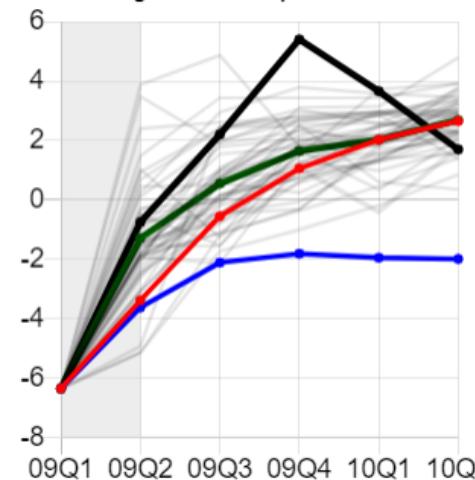
Balanced panel



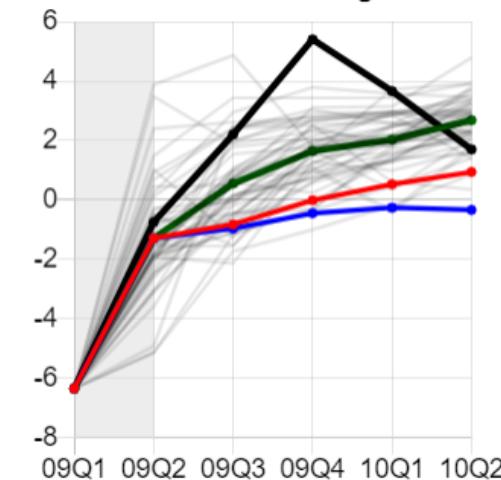
Conditioning on SPF nowcast



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	DS04				WW11				SW07				FU20				FRBEDO08				NKBGG				
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC													
Horizon	0	2.10	2.72		2.37	2.88			1.76	2.06			2.38	2.15			2.50	1.88			2.45	2.45			
	1	1.31	1.23	1.27	1.12	1.37	1.30	1.34	1.23	1.30	1.22	1.53	1.36	1.55	1.39	1.59	1.46	1.45	1.31	1.41	1.14	1.46	1.35	1.39	1.27
	2	1.16	1.12	1.15	1.12	1.15	1.14	1.15	1.14	1.19	1.08	1.32	1.22	1.34	1.23	1.37	1.28	1.24	1.21	1.35	1.04	1.19	1.16	1.17	1.15
	3	1.11	1.13	1.14	1.22	1.05	1.09	1.08	1.14	1.08	0.82	1.11	1.04	1.11	1.06	1.12	1.16	0.89	0.94	1.40	1.06	0.92	0.93	0.93	0.94
	4	0.98	1.02	1.06	1.17	0.89	0.93	0.96	1.03	1.30	1.00	0.66	0.59	0.83	0.88	0.73	0.74	1.02	0.89	1.28	1.11	0.88	0.86	0.87	0.85

Source	CMR14				DNGS15				KR15_HH				KR15_FF				VI16_BGG				VI16_GK				
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	2.04	1.42		1.55	0.91			1.98	2.62			1.98	2.89			2.19	2.09			2.20	2.09			
	1	1.41	1.25	1.24	1.18	1.15	1.13	1.04	1.07	1.49	1.13	1.63	1.13	1.55	1.13	1.56	1.43	1.47	1.11	1.48	1.13	1.42	1.06	1.45	1.06
	2	1.38	1.25	1.33	1.23	1.05	1.14	1.03	1.13	1.32	1.07	1.52	1.26	1.21	1.05	1.21	1.09	1.60	1.26	1.57	1.26	1.54	1.14	1.54	1.13
	3	1.39	1.33	1.41	1.38	1.27	1.48	1.30	1.48	1.04	1.23	1.46	1.28	0.87	0.85	0.91	0.80	2.50	2.13	2.44	2.09	2.28	1.83	2.25	1.80
	4	0.94	0.93	1.11	1.13	1.63	1.66	1.69	1.76	1.38	2.11	1.49	1.81	0.83	0.87	0.87	0.86	2.86	2.60	2.82	2.60	2.60	2.26	2.55	2.30

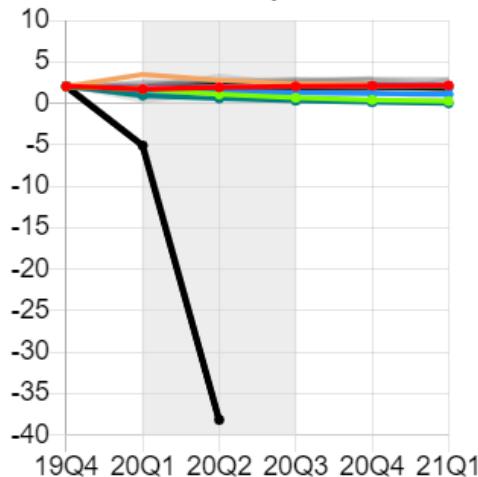
Source	QPM08				IN10				GSW12				3vBVAR				5vBVAR				8vBVAR				Fair	SPF	
Scenario	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC	BP	SPF	CQ	FC			
Horizon	0	2.57	2.39		0.96	0.96	1.33	1.33	1.88	1.69			2.58	2.61			2.49	2.26			2.03	1.79			1.91	2.32	
	1	1.34	1.30	1.30	1.30	0.76	0.76	0.77	0.77	1.31	1.15	1.33	1.28	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	1.06	1.08	1.05	1.09	0.93	0.93	0.93	0.93	1.06	0.94	1.04	1.04	1.28	1.19	1.23	1.16	1.39	1.28	1.34	1.24	1.39	1.32	1.39	1.28	1.24	4.52
	3	0.86	0.86	0.80	0.86	1.50	1.50	1.59	1.59	0.73	0.55	0.77	0.63	1.47	1.42	1.39	1.33	1.83	1.73	1.78	1.59	1.80	1.66	1.85	1.56	1.21	2.42
	4	1.26	1.14	1.26	1.15	1.94	1.94	2.07	2.07	1.31	1.33	0.95	1.06	1.22	1.51	1.17	1.46	1.78	1.86	1.80	1.74	1.67	1.62	1.75	1.53	0.99	1.83

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

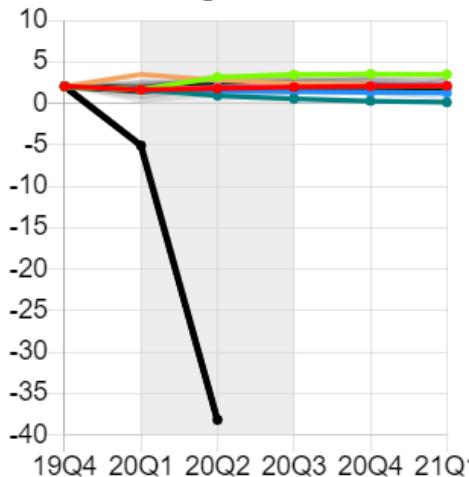
\* The actual GDP growth in 2020:I – 2020:II are collected as of August 27, 2020.



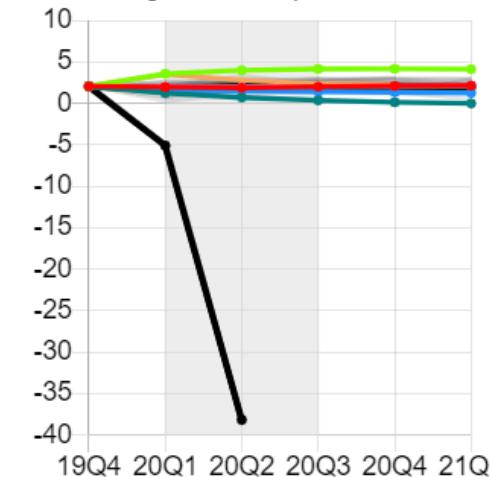
Forecast start 2020Q1



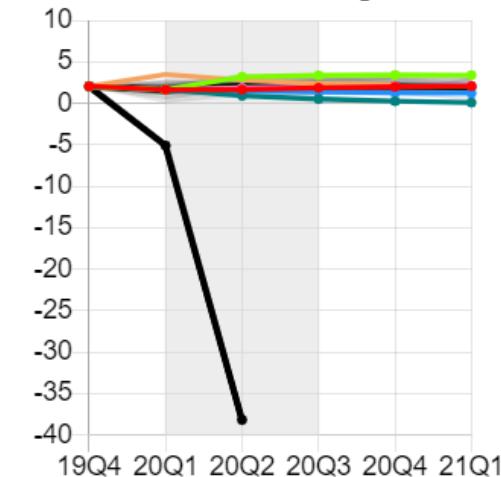
## Conditioning on SPF nowcast



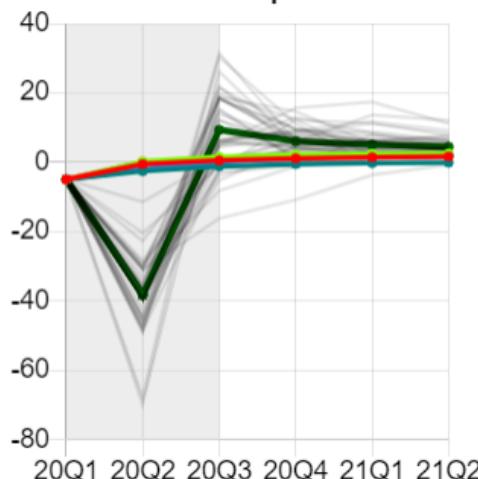
### Conditioning on current-quarter observations



## Full conditioning

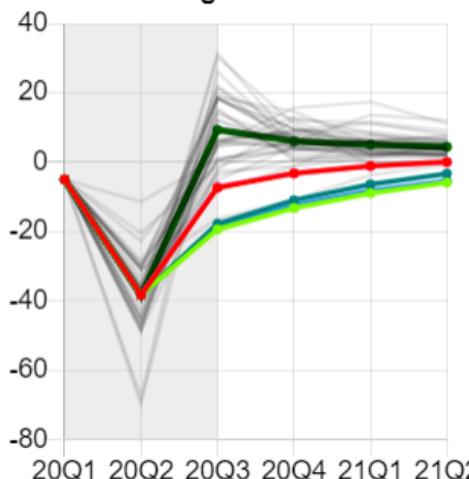


## Balanced panel

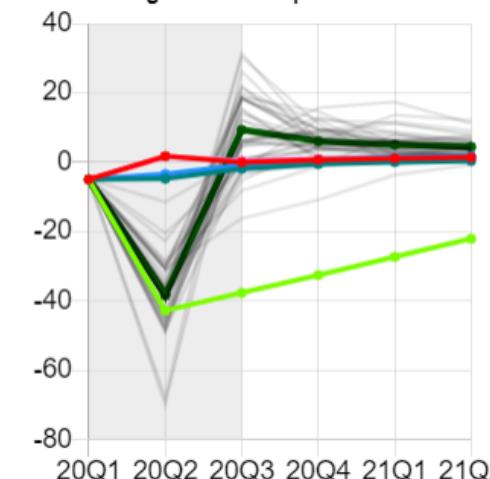


Forecast start 2020Q2

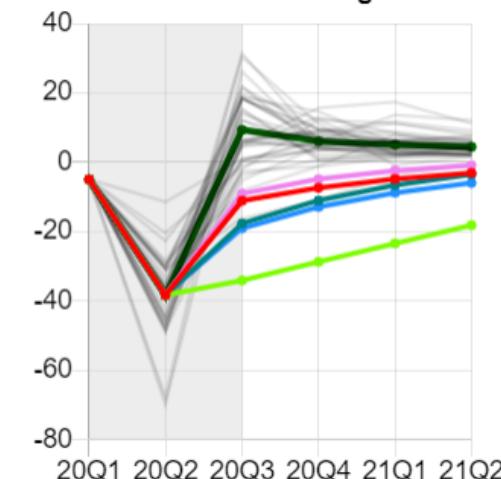
### Conditioning on SPF nowcast



### Conditioning on current-quarter observations



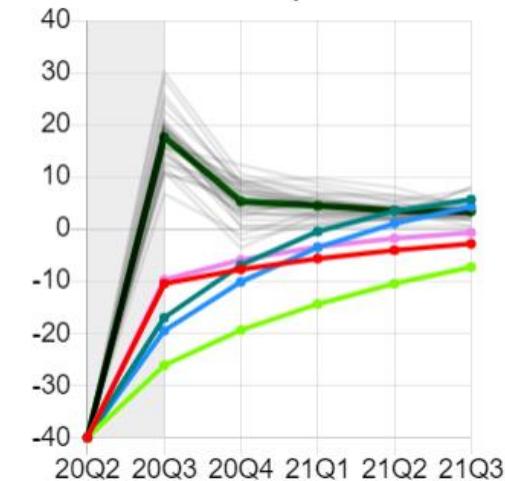
### **Full conditioning**



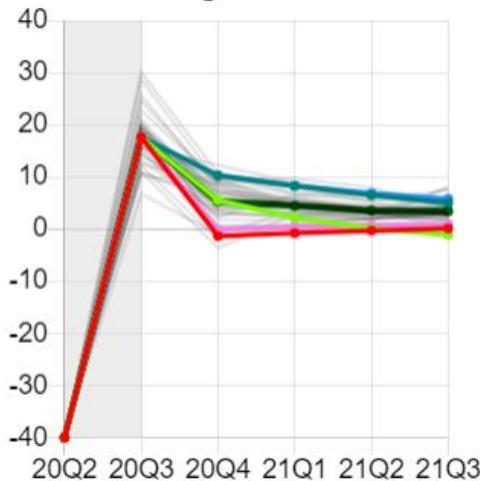
DS04 FRBEDO08 FU20 SW07 WW11 SPFIndividual SPFMean Actual

### Forecast start 2020Q3

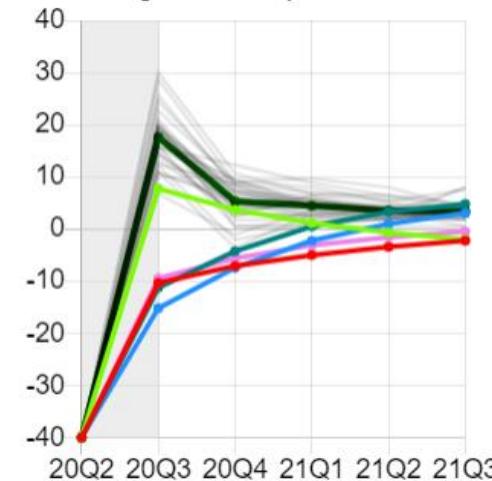
Balanced panel



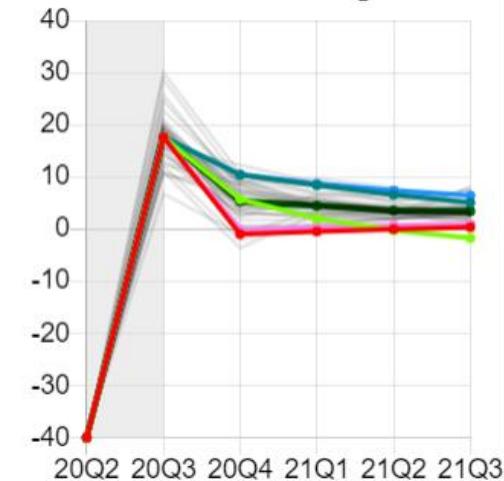
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning



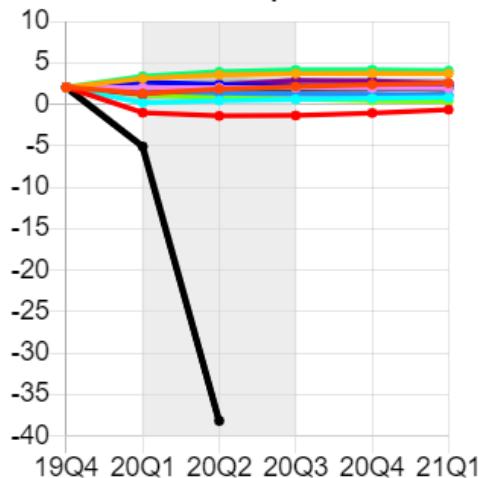
- Comparison of forecasts in 2020:I – 2020:III\*
- Post-crisis models

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

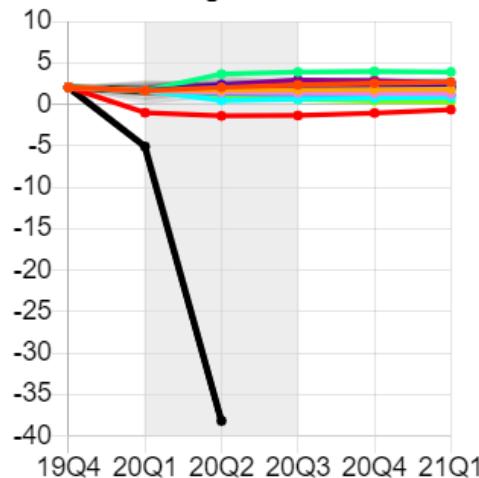
CMR14 DNGS15 GSW12 IN10 KR15\_FF KR15\_HH NKBGG QPM08 VI16\_BGG VI16\_GK SPFIndividual SPFMean Actual

### Forecast start 2020Q1

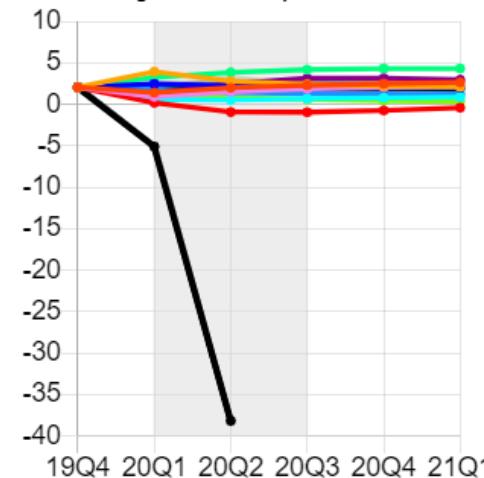
Balanced panel



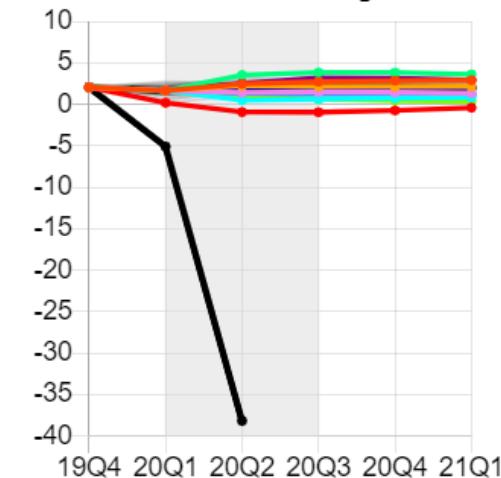
Conditioning on SPF nowcast



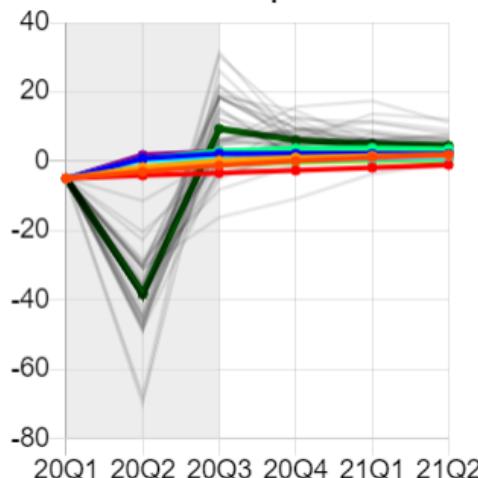
Conditioning on current-quarter observations



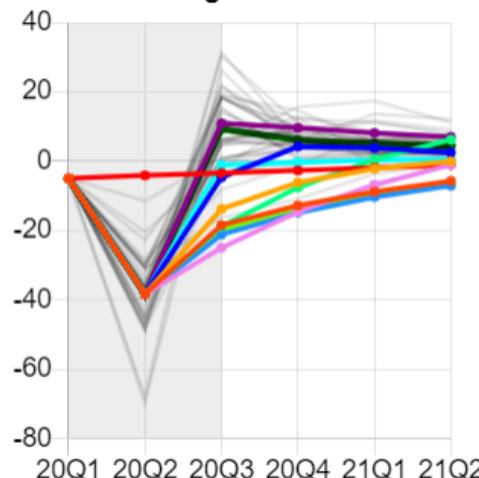
Full conditioning



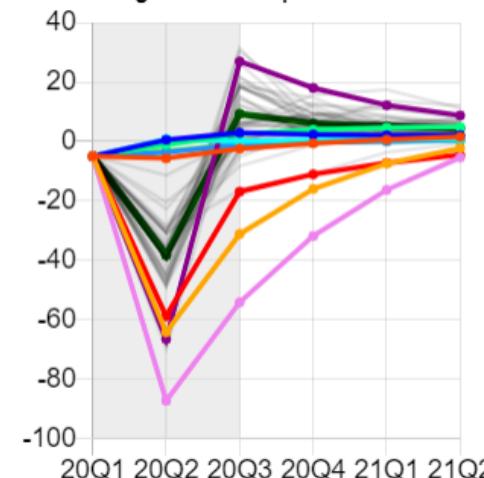
Balanced panel



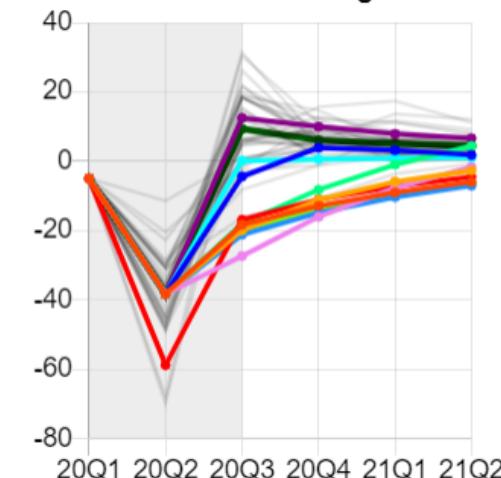
Conditioning on SPF nowcast



Conditioning on current-quarter observations



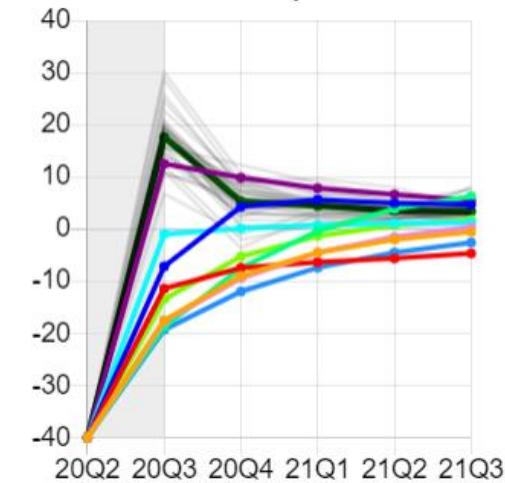
Full conditioning



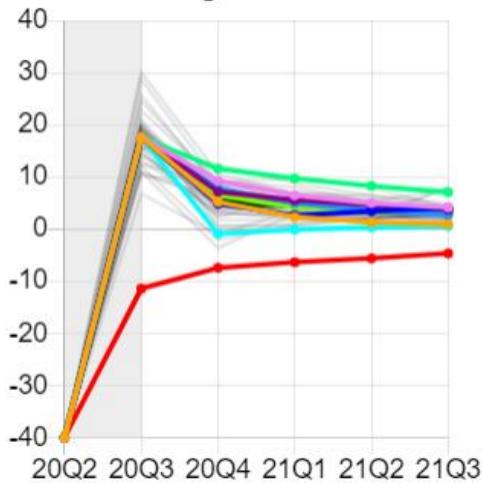
DNGS15 GSW12 IN10 KR15\_FF KR15\_HH NKBGG QPM08 VI16\_BGG VI16\_GK SPFIndividual SPFMean Actual

### Forecast start 2020Q3

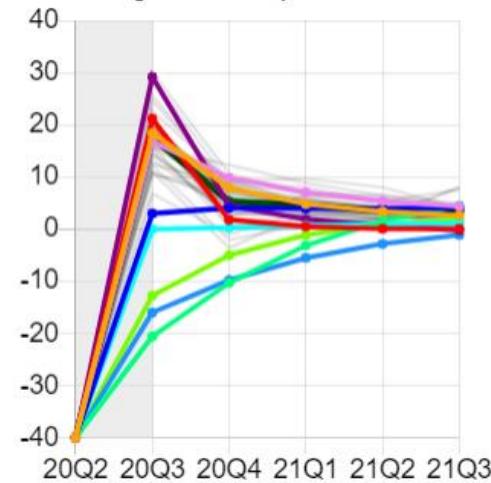
Balanced panel



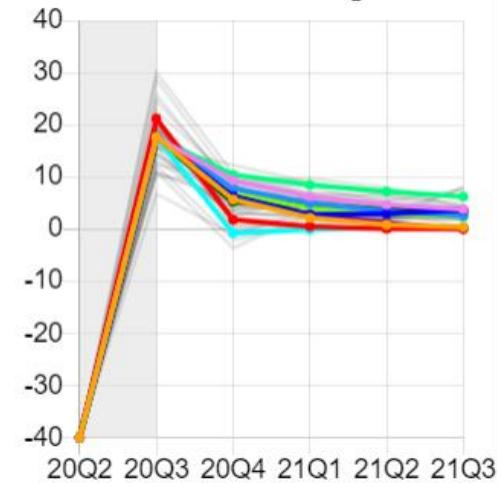
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning



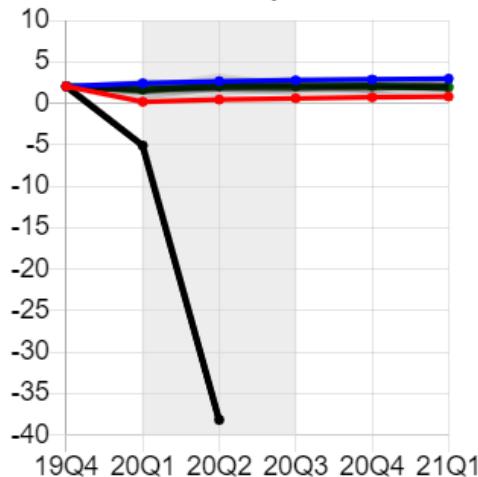
- **Comparison of forecasts in 2020:I – 2020:III\***
- **Structural models versus time-series models**

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

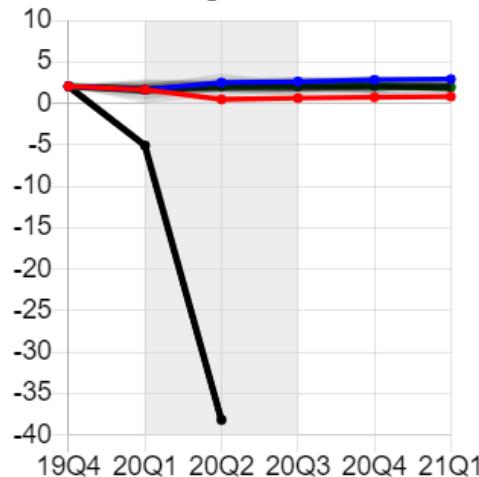
■ NKBGG ■ GLP5v ■ SPFIndividual ■ SPFMean ■ Actual

### Forecast start 2020Q1

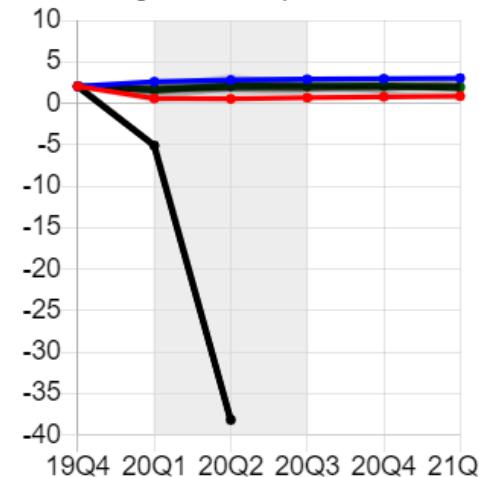
**Balanced panel**



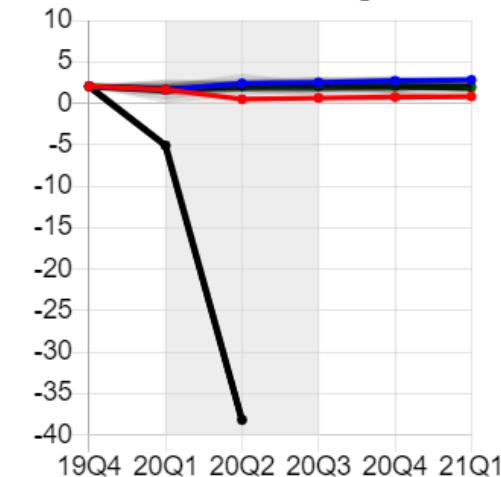
**Conditioning on SPF nowcast**



**Conditioning on current-quarter observations**

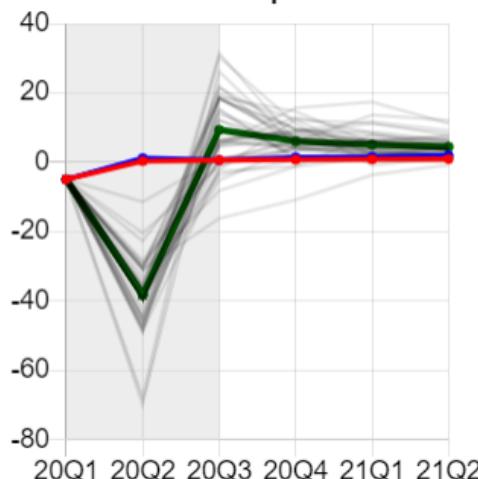


**Full conditioning**

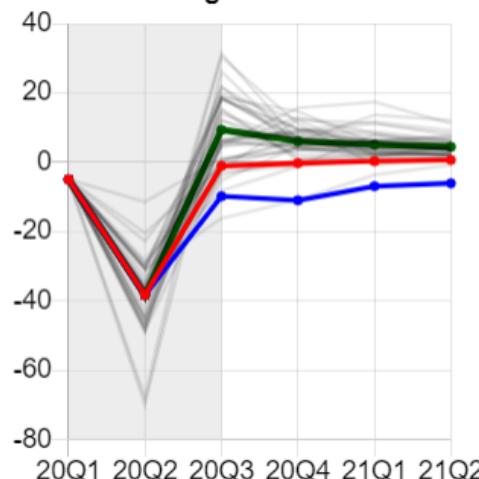


### Forecast start 2020Q2

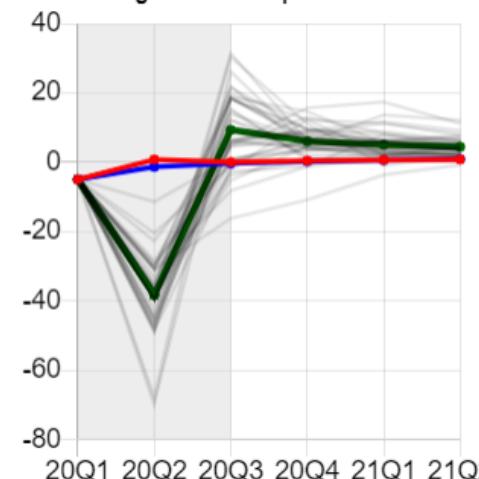
**Balanced panel**



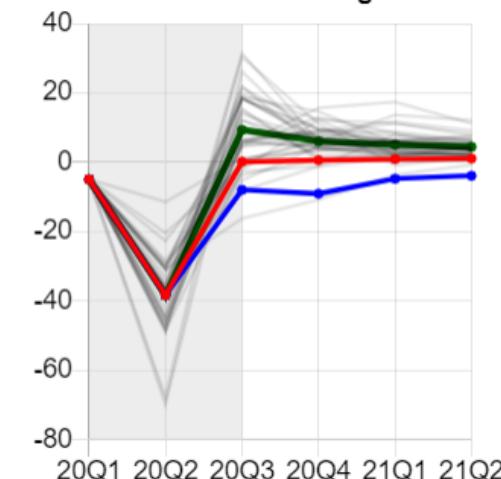
**Conditioning on SPF nowcast**



**Conditioning on current-quarter observations**



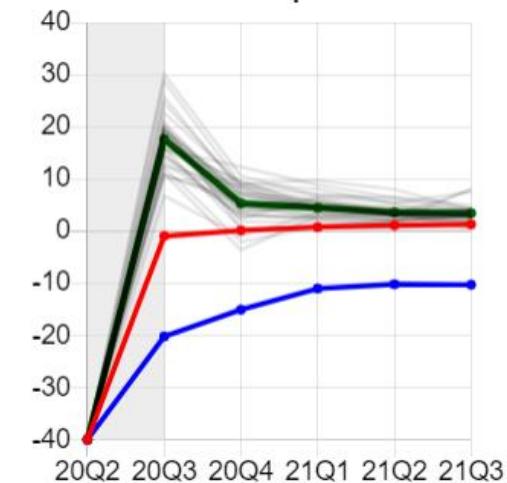
**Full conditioning**



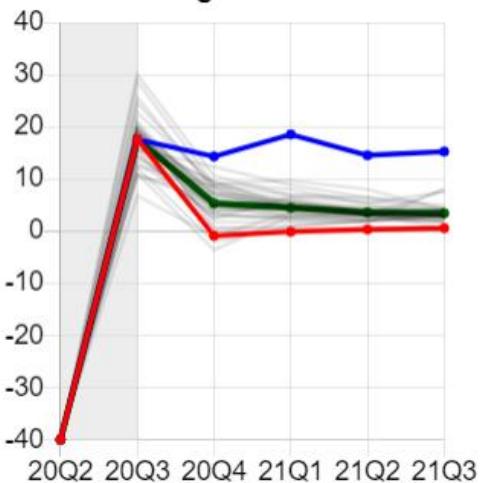
■ NKBGG ■ GLP5v ■ SPFIndividual ■ SPFMean ■ Actual

### Forecast start 2020Q3

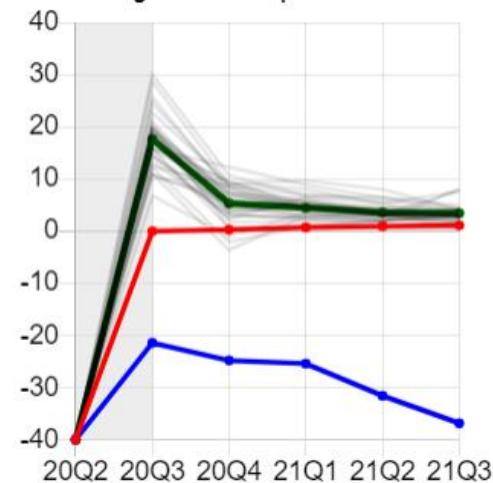
Balanced panel



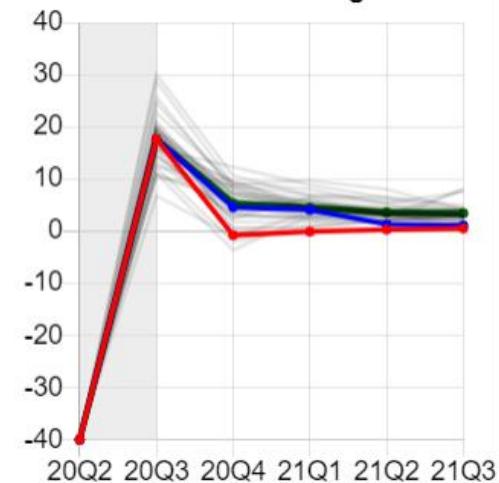
Conditioning on SPF nowcast



Conditioning on current-quarter observations



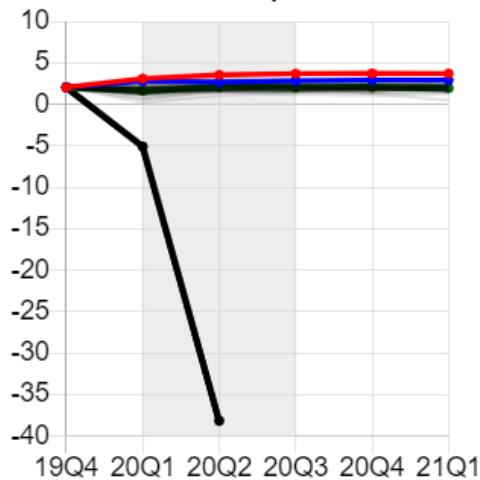
Full conditioning



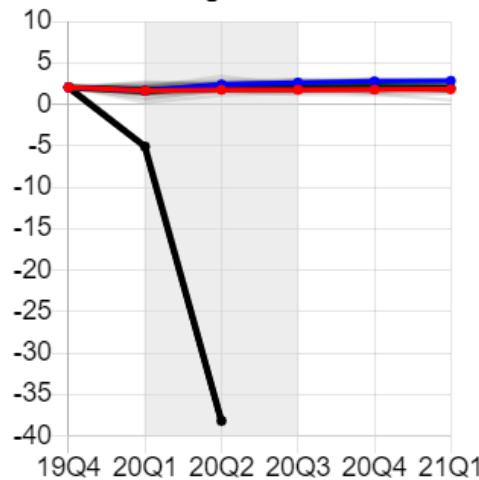
DNGS15 GLP8v SPFIndividual SPFMean Actual

### Forecast start 2020Q1

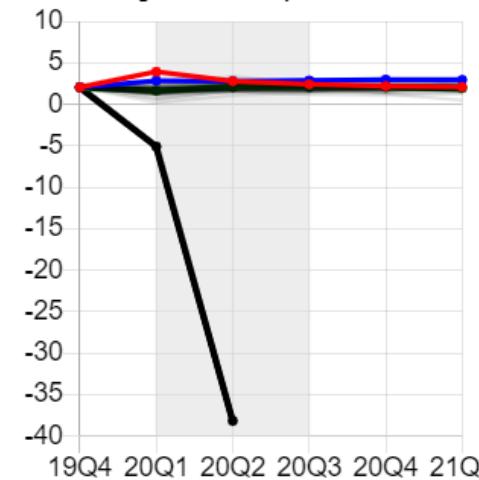
Balanced panel



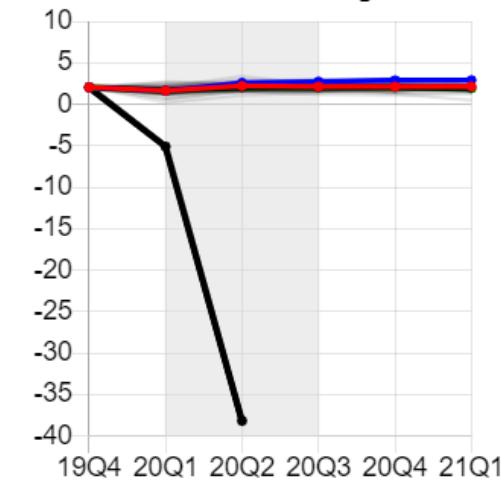
Conditioning on SPF nowcast



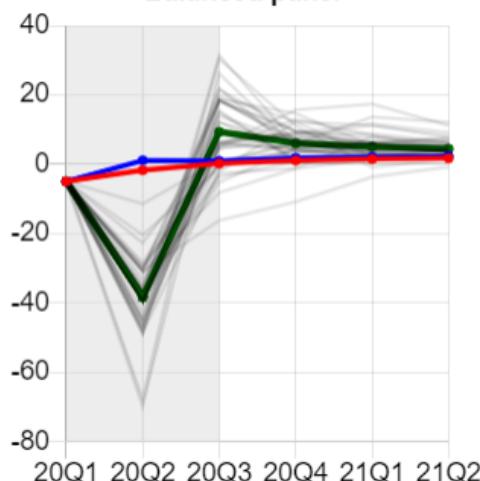
Conditioning on current-quarter observations



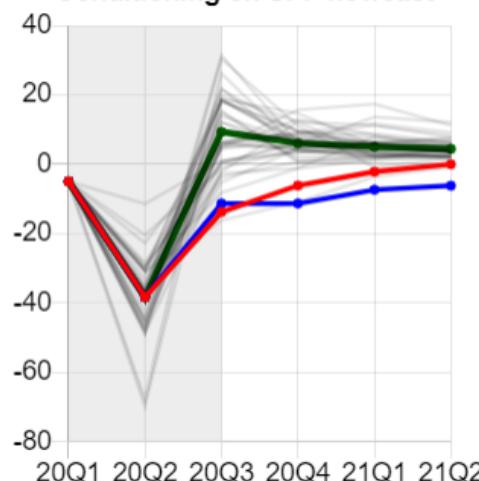
Full conditioning



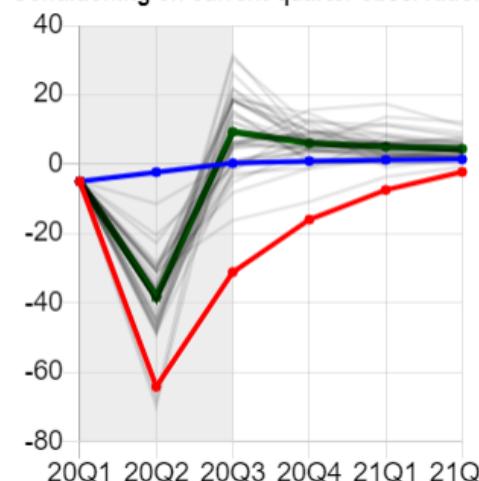
Balanced panel



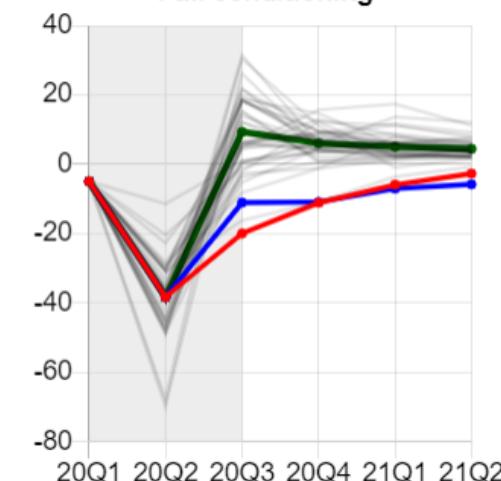
Conditioning on SPF nowcast



Conditioning on current-quarter observations



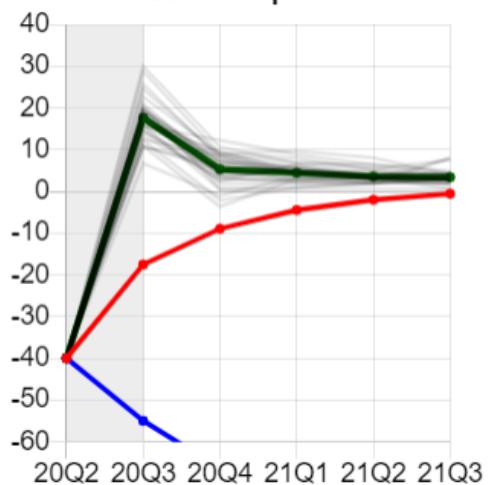
Full conditioning



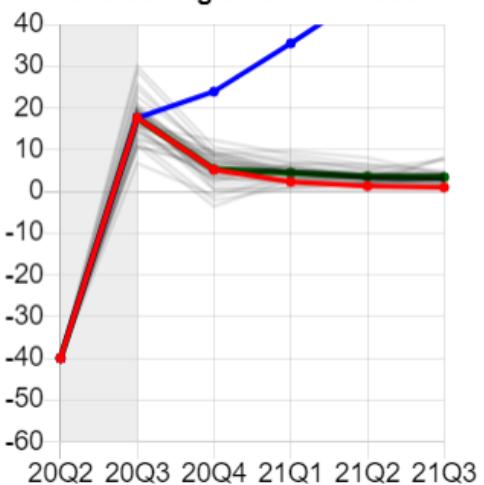
DNGS15 GLP8v SPFIndividual SPFMean Actual

### Forecast start 2020Q3

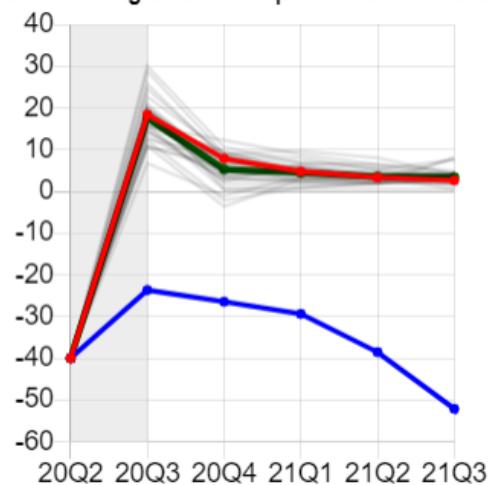
Balanced panel



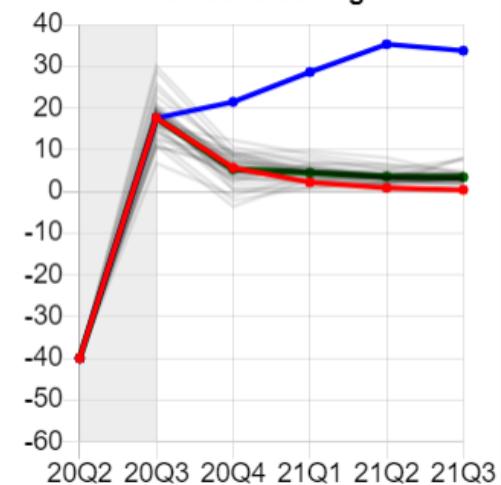
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning



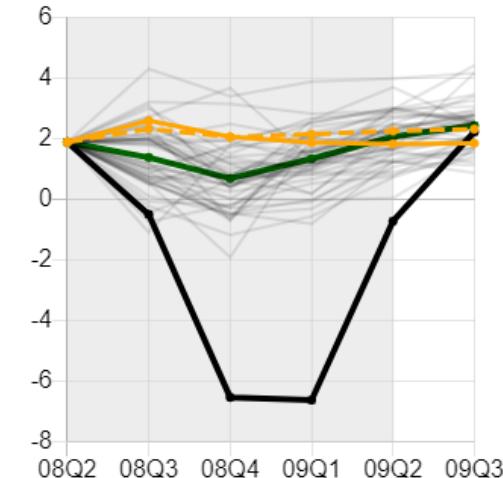
- Comparison of forecast and relative\* RMSEs from the original DNGS15 model and a modified DNGS15 model with less nominal rigidities
- Forecast period: 2008:III – 2009: II

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

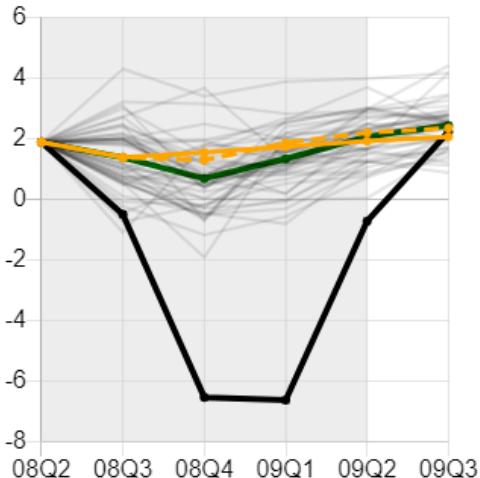
DNGS15 DNGS15\_nofa SPFIndividual SPFMean Actual

### Forecast start 2008Q3

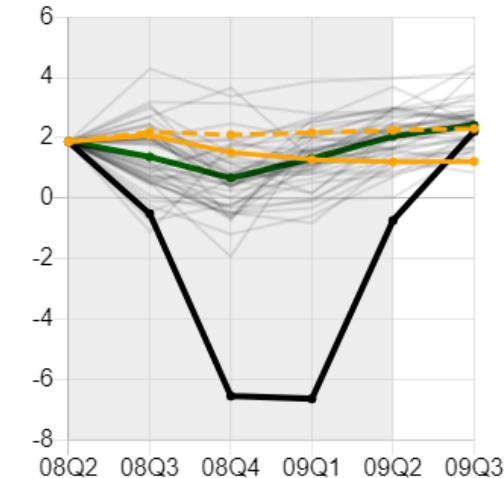
Balanced panel



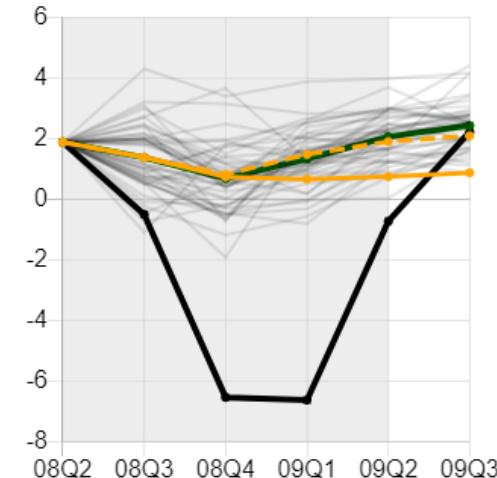
Conditioning on SPF nowcast



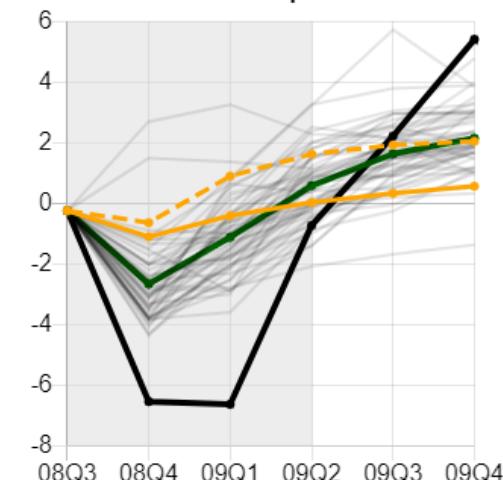
Conditioning on current-quarter observations



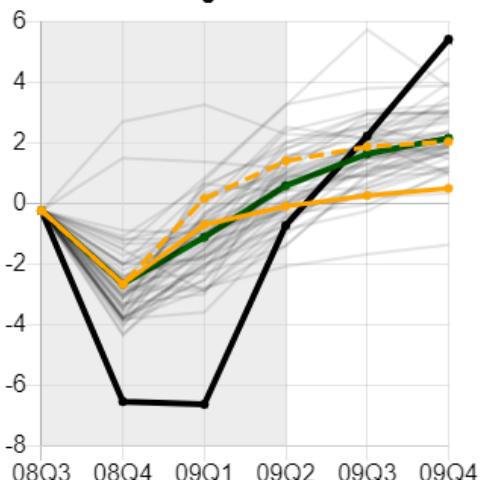
Full conditioning



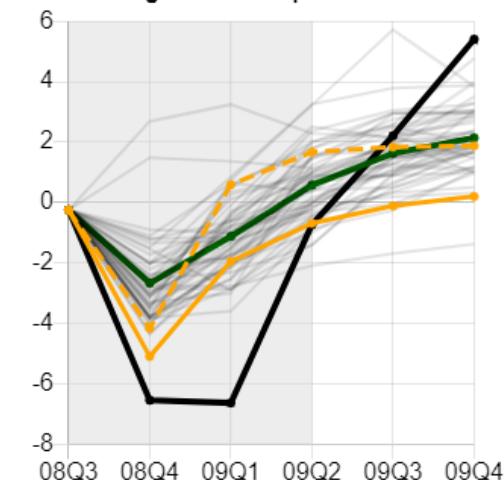
Balanced panel



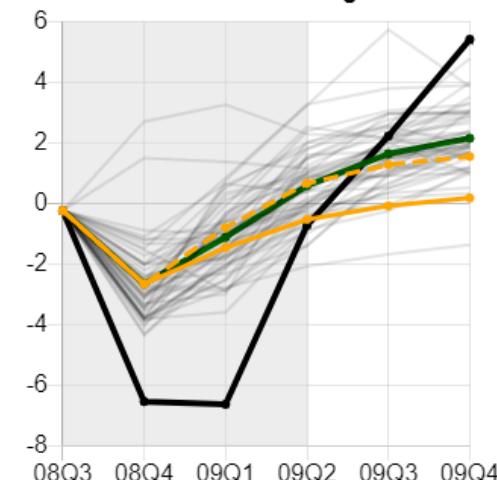
Conditioning on SPF nowcast



Conditioning on current-quarter observations



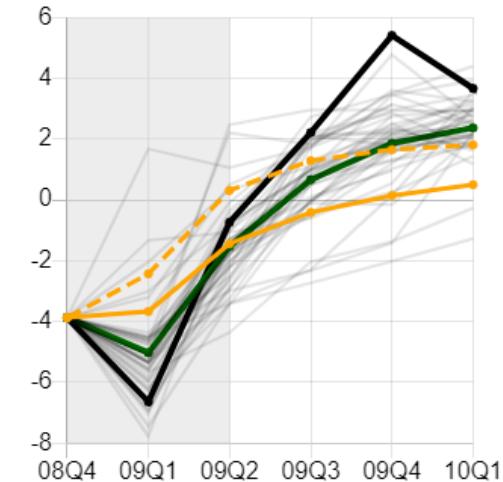
Full conditioning



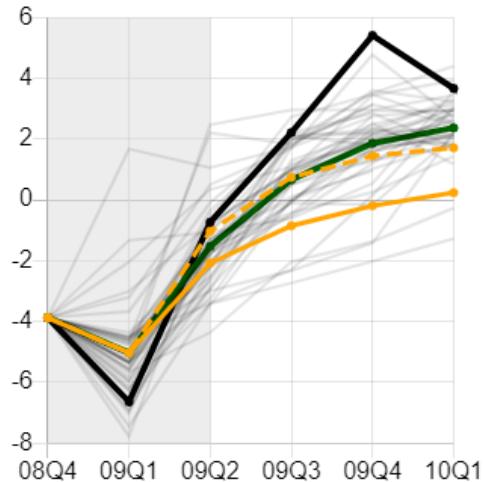
DNGS15 DNGS15\_nofa SPFIndividual SPFMean Actual

### Forecast start 2009Q1

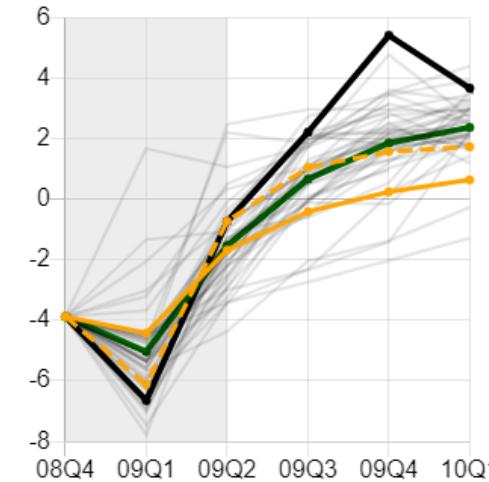
Balanced panel



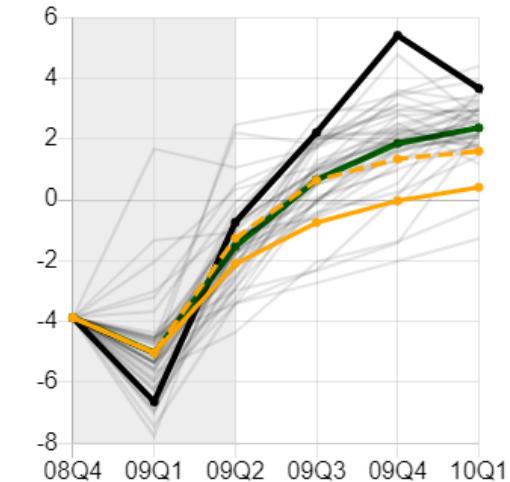
Conditioning on SPF nowcast



Conditioning on current-quarter observations

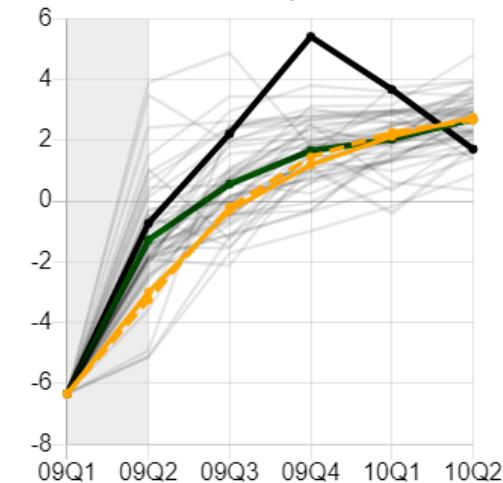


Full conditioning

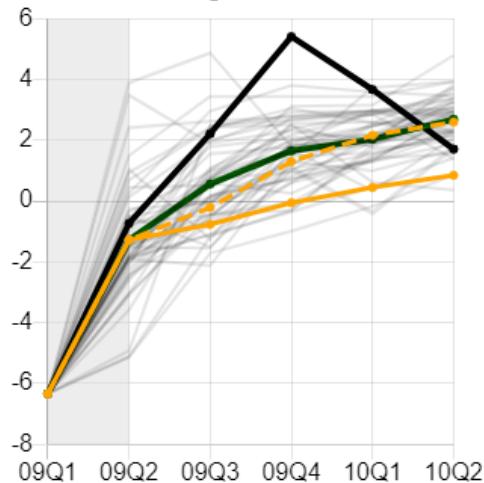


### Forecast start 2009Q2

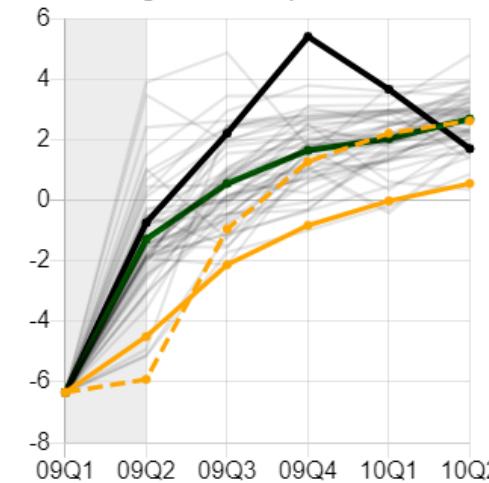
Balanced panel



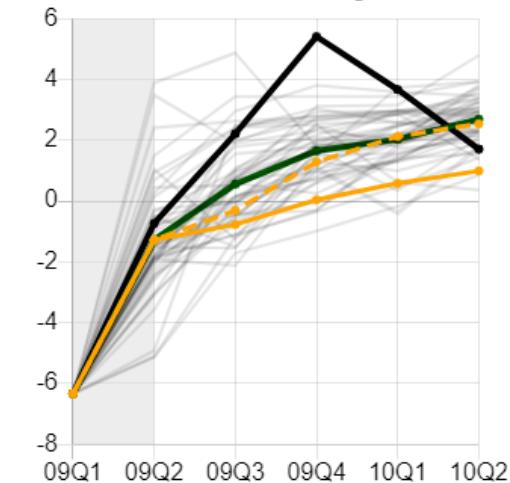
Conditioning on SPF nowcast



Conditioning on current-quarter observations



Full conditioning



Source Scenario	DNGS15				DNGS15_nofa				SPFM	
	NoExt	SPF	CQ	FV	NoExt	SPF	CQ	FV		
Forecast Horizon	0	1.57		1.14		1.76		1.36		2.32
	1	1.18	1.14	1.11	1.03	1.26	1.15	1.26	1.05	4.64
	2	1.09	1.16	1.15	1.05	1.10	1.08	1.12	1.03	4.52
	3	1.31	1.50	1.45	1.41	1.03	1.07	1.05	1.07	2.42
	4	1.61	1.66	1.70	1.74	1.08	1.10	1.13	1.22	1.83

- 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.

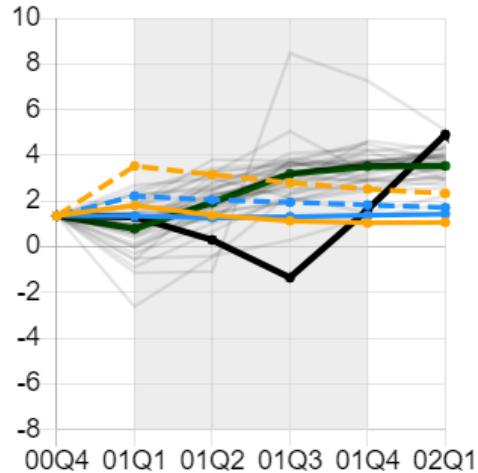
\* In the rolling window specification, the size of each sample is fixed to 100

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

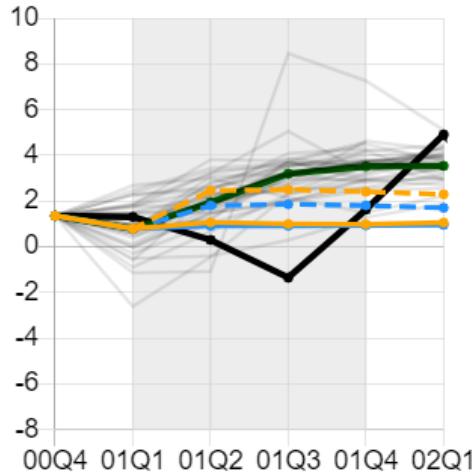
DNGS15 DNGS15\_ew SW07 SW07\_ew SPFIndividual SPFMean Actual

### Forecast start 2001Q1

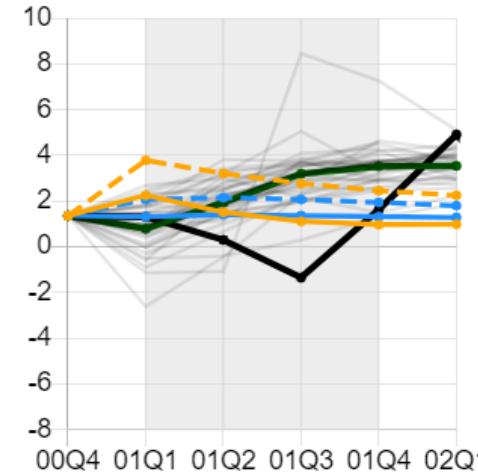
Balanced panel



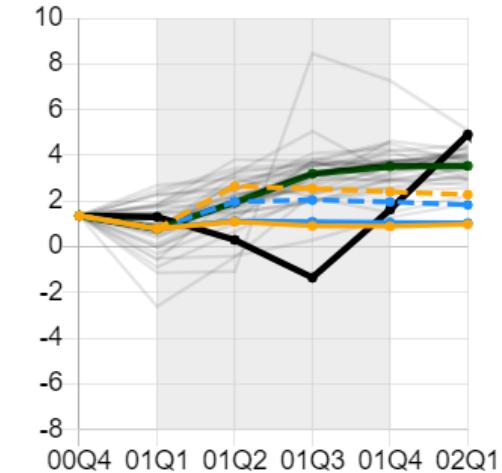
Conditioning on SPF nowcast



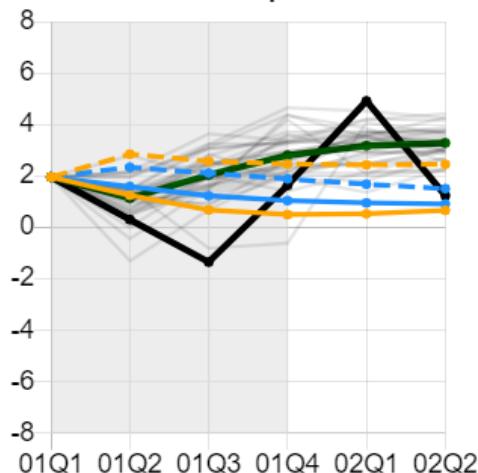
Conditioning on current-quarter observations



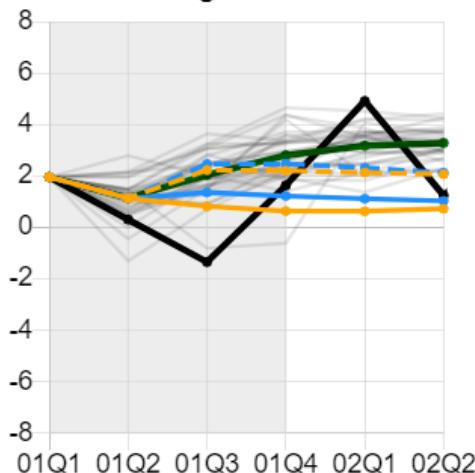
Full conditioning



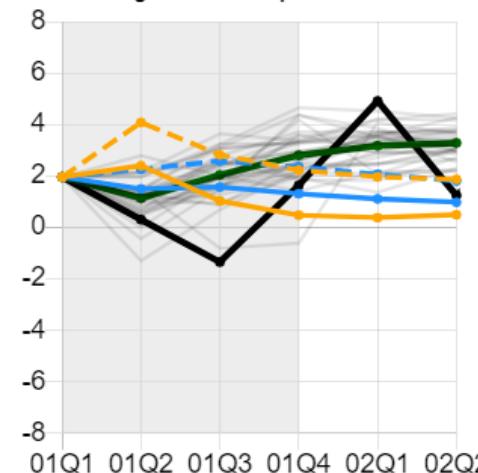
Balanced panel



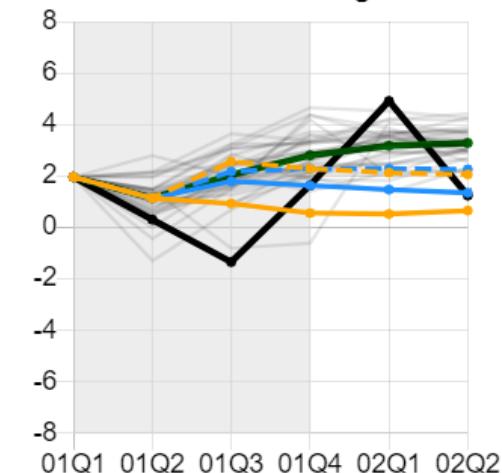
Conditioning on SPF nowcast



Conditioning on current-quarter observations



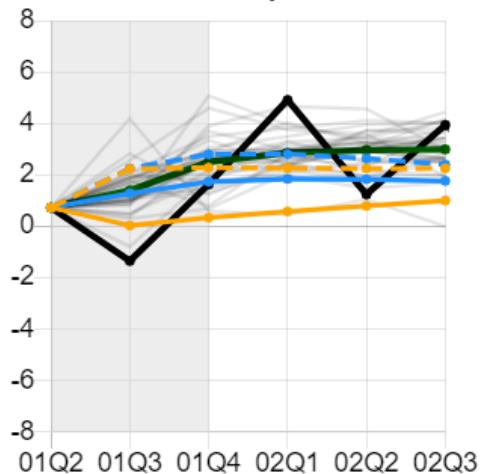
Full conditioning



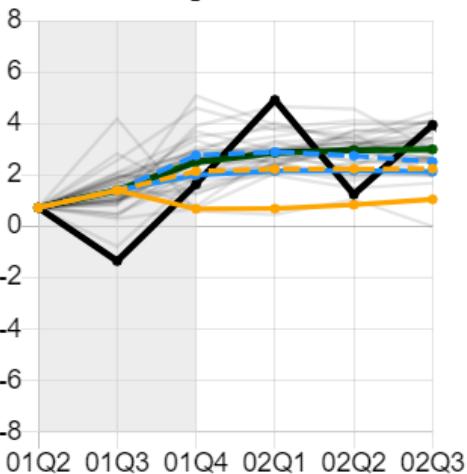
DNGS15 DNGS15\_ew SW07 SW07\_ew SPFIndividual SPFMean Actual

### Forecast start 2001Q3

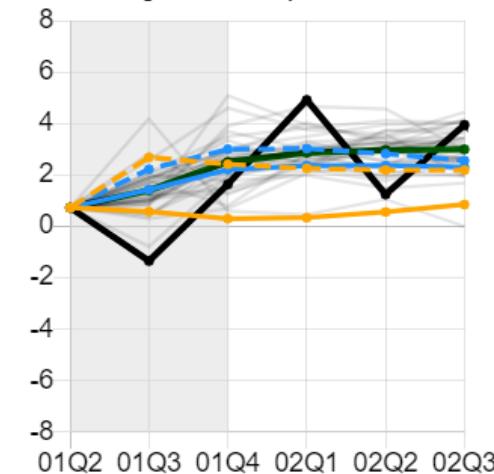
Balanced panel



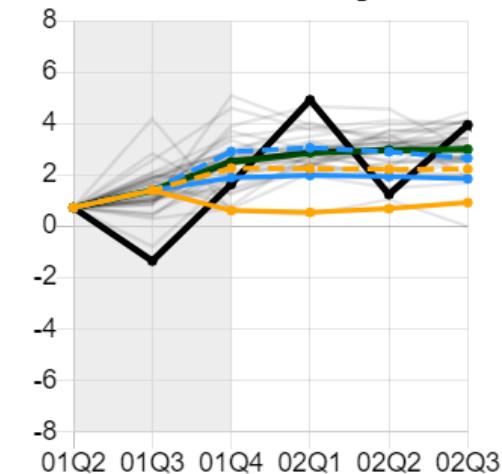
Conditioning on SPF nowcast



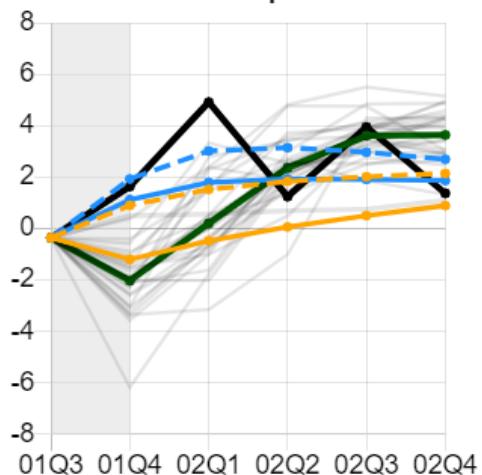
Conditioning on current-quarter observations



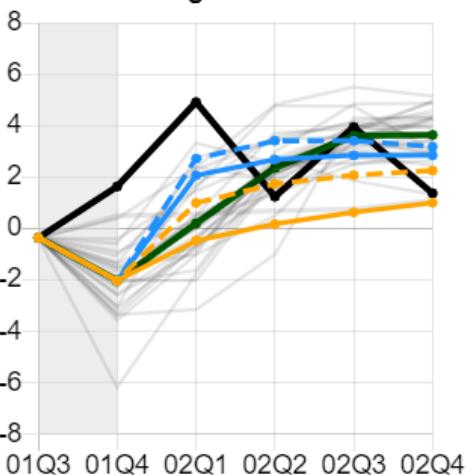
Full conditioning



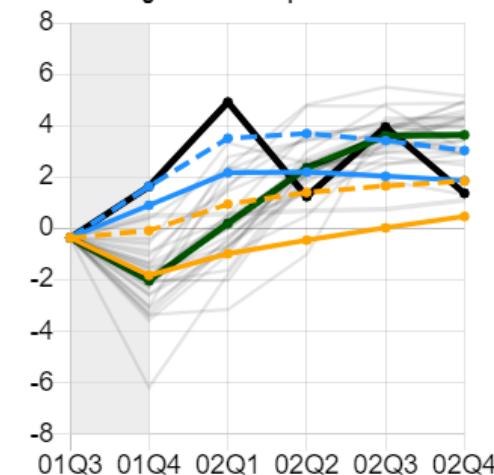
Balanced panel



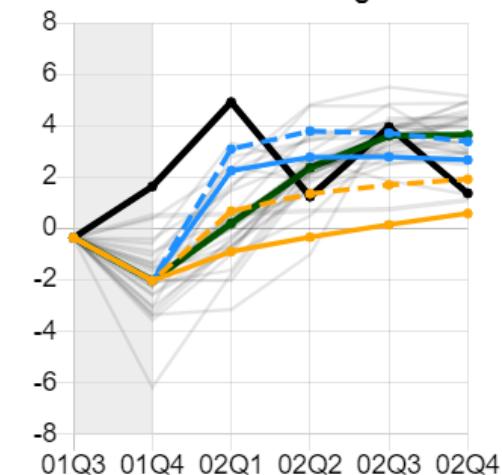
Conditioning on SPF nowcast



Conditioning on current-quarter observations



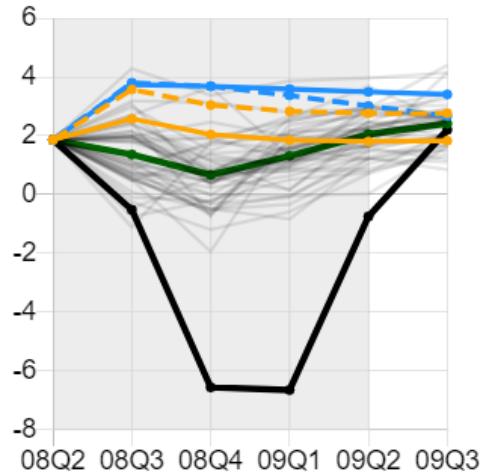
Full conditioning



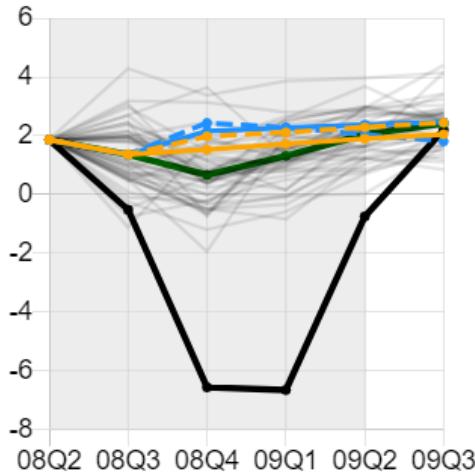
DNGS15 DNGS15\_ew SW07 SW07\_ew SPFIndividual SPFMean Actual

### Forecast start 2008Q3

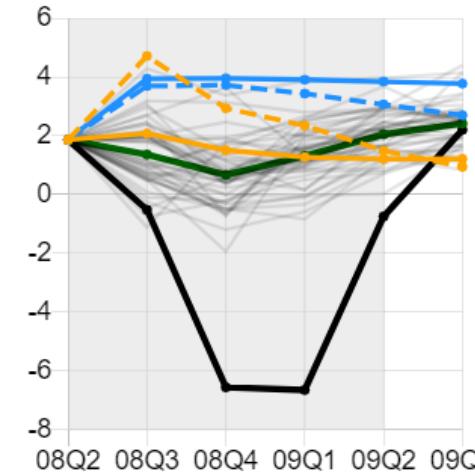
Balanced panel



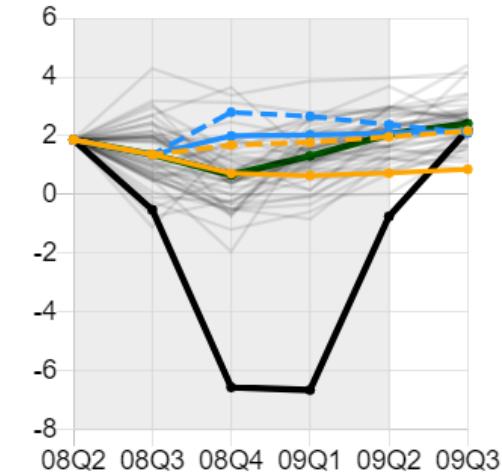
Conditioning on SPF nowcast



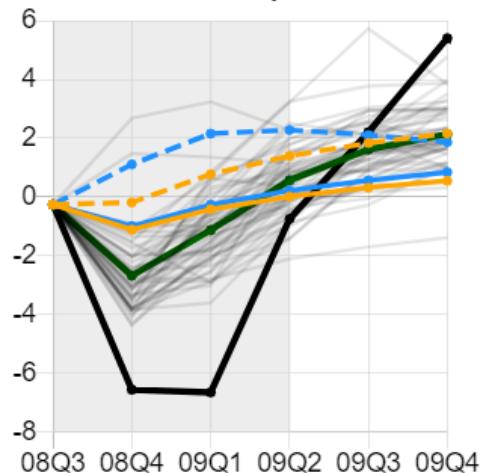
Conditioning on current-quarter observations



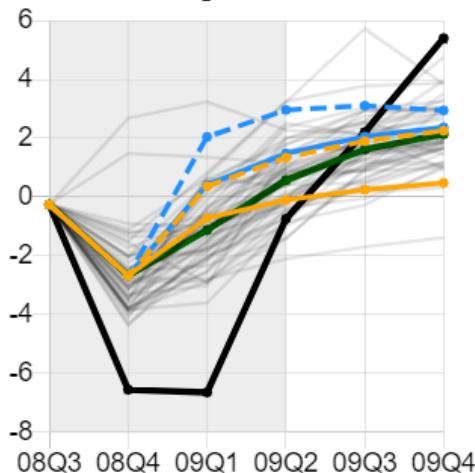
Full conditioning



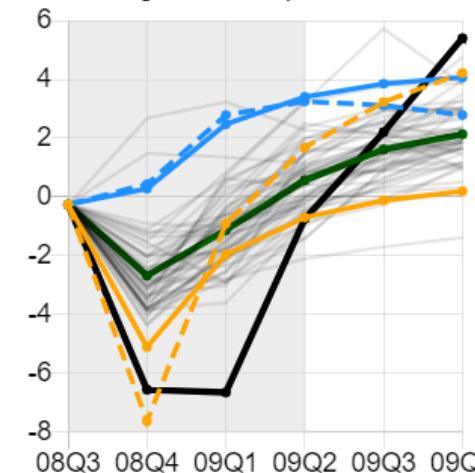
Balanced panel



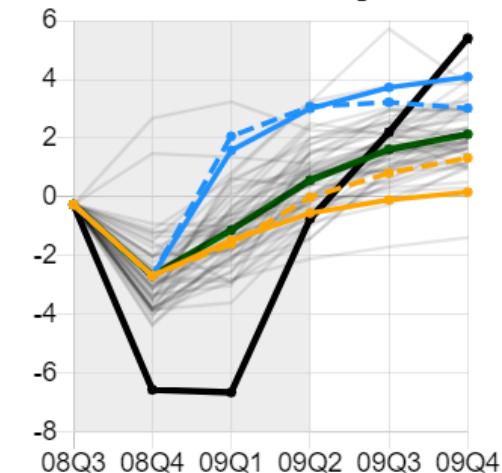
Conditioning on SPF nowcast



Conditioning on current-quarter observations



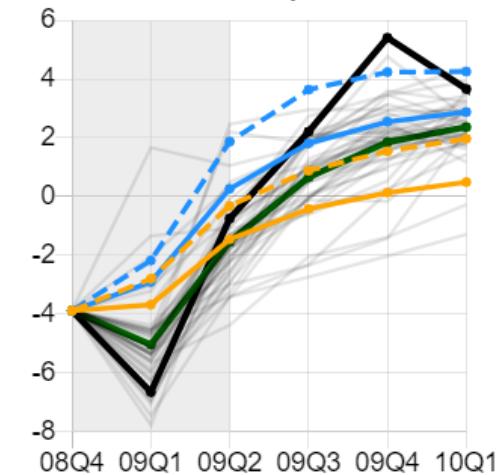
Full conditioning



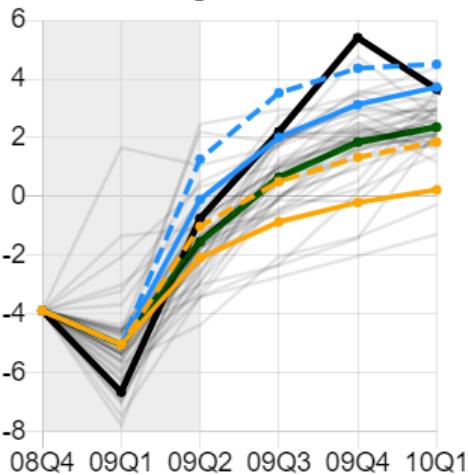
DNGS15 DNGS15\_ew SW07 SW07\_ew SPFIndividual SPFMean Actual

### Forecast start 2009Q1

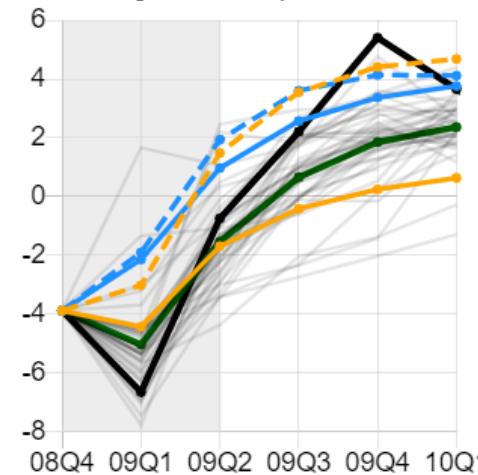
Balanced panel



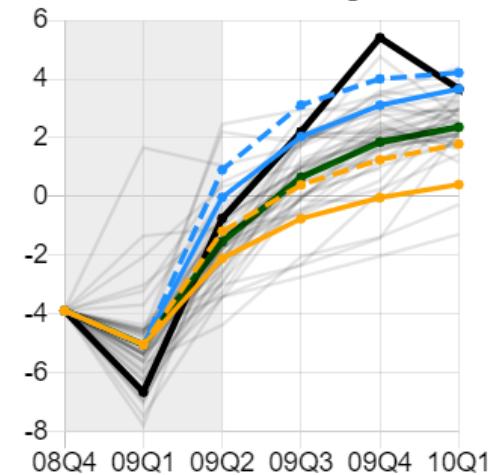
Conditioning on SPF nowcast



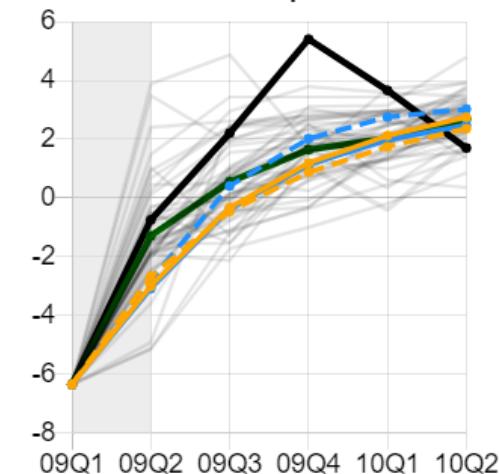
Conditioning on current-quarter observations



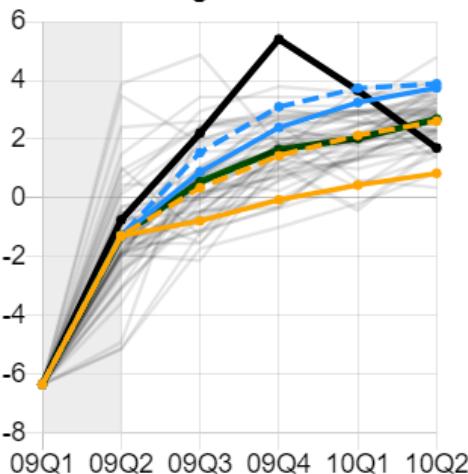
Full conditioning



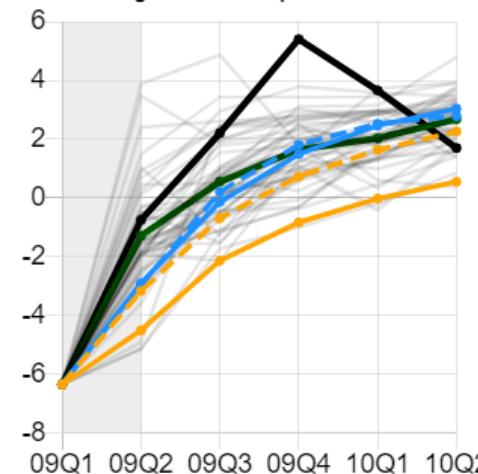
Balanced panel



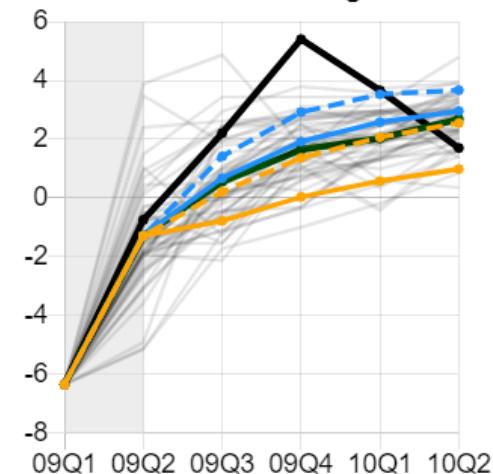
Conditioning on SPF nowcast



Conditioning on current-quarter observations

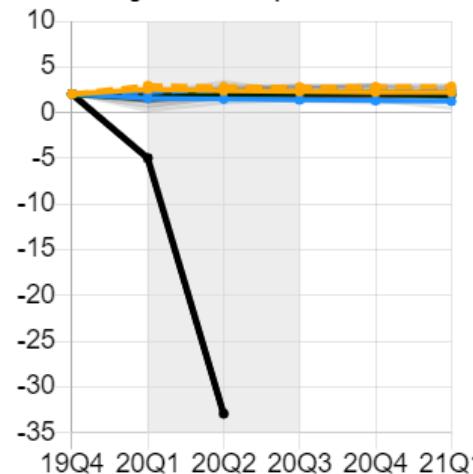
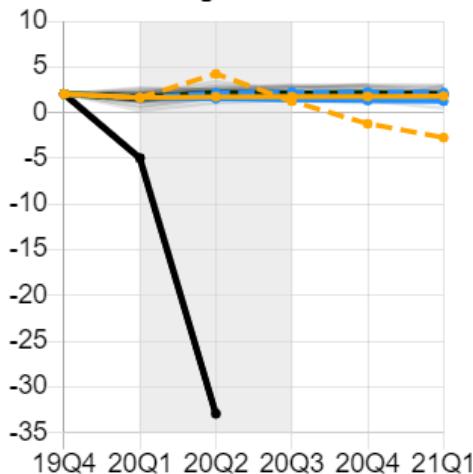
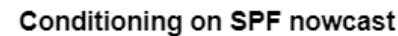
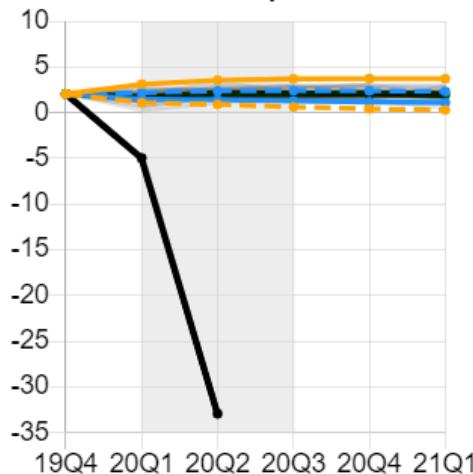


Full conditioning

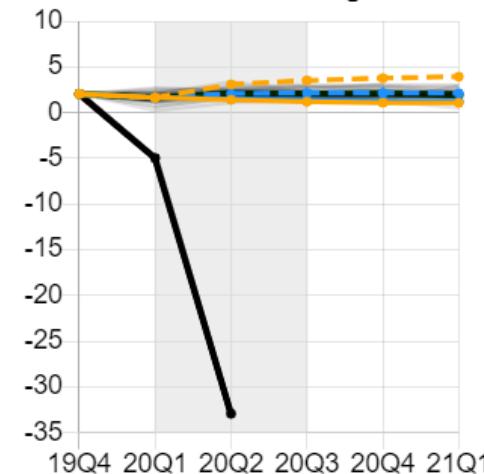




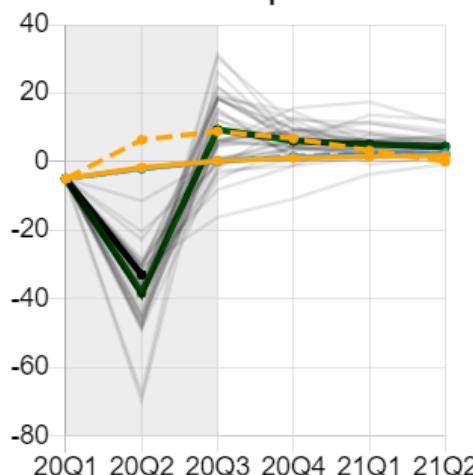
Forecast start 2020Q1



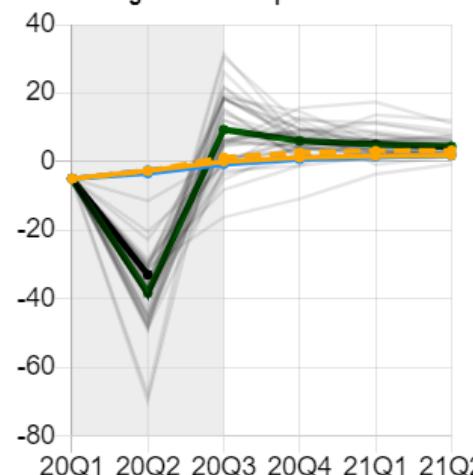
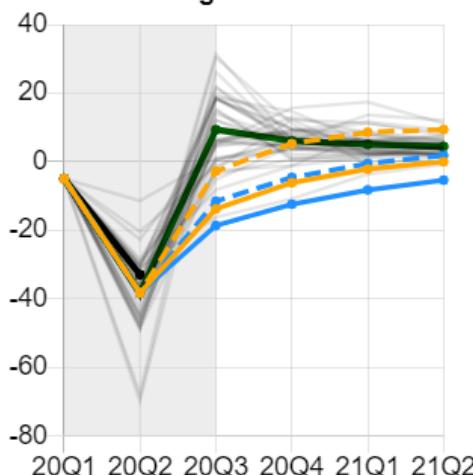
## Full conditioning



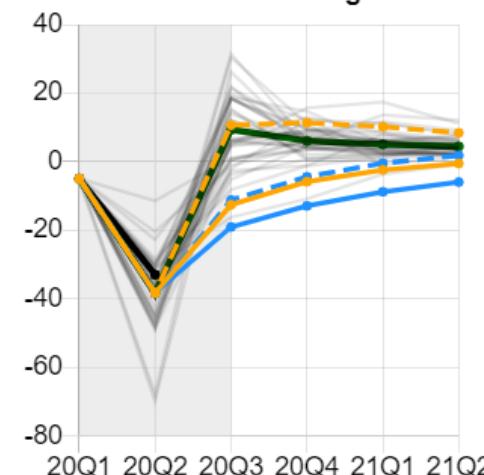
## Balanced panel



Forecast start 2020Q2



## 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