Raiders of the Lost High-Frequency Forecasts: New Data and Evidence on the Efficiency of the Fed's Forecasting

Andrew C. Chang and Trace J. Levinson

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Disclaimer

The views and opinions expressed here are ours and are not necessarily those of the Board of Governors of the Federal Reserve System.

New Data

- Fed staff forecasts the macroeconomy.
- Previous forecast data: Greenbook/Tealbooks.
  - Prepared for each interest-rate setting (FOMC) meeting.
- New forecast data: between-Tealbook forecasts.
  - High-frequency forecast dataset.

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- U.S. real GDP growth and core PCE inflation.
- 2001-2011.
- 1-quarter backcasts to 2-quarter ahead forecasts.
- Weekly GDP.
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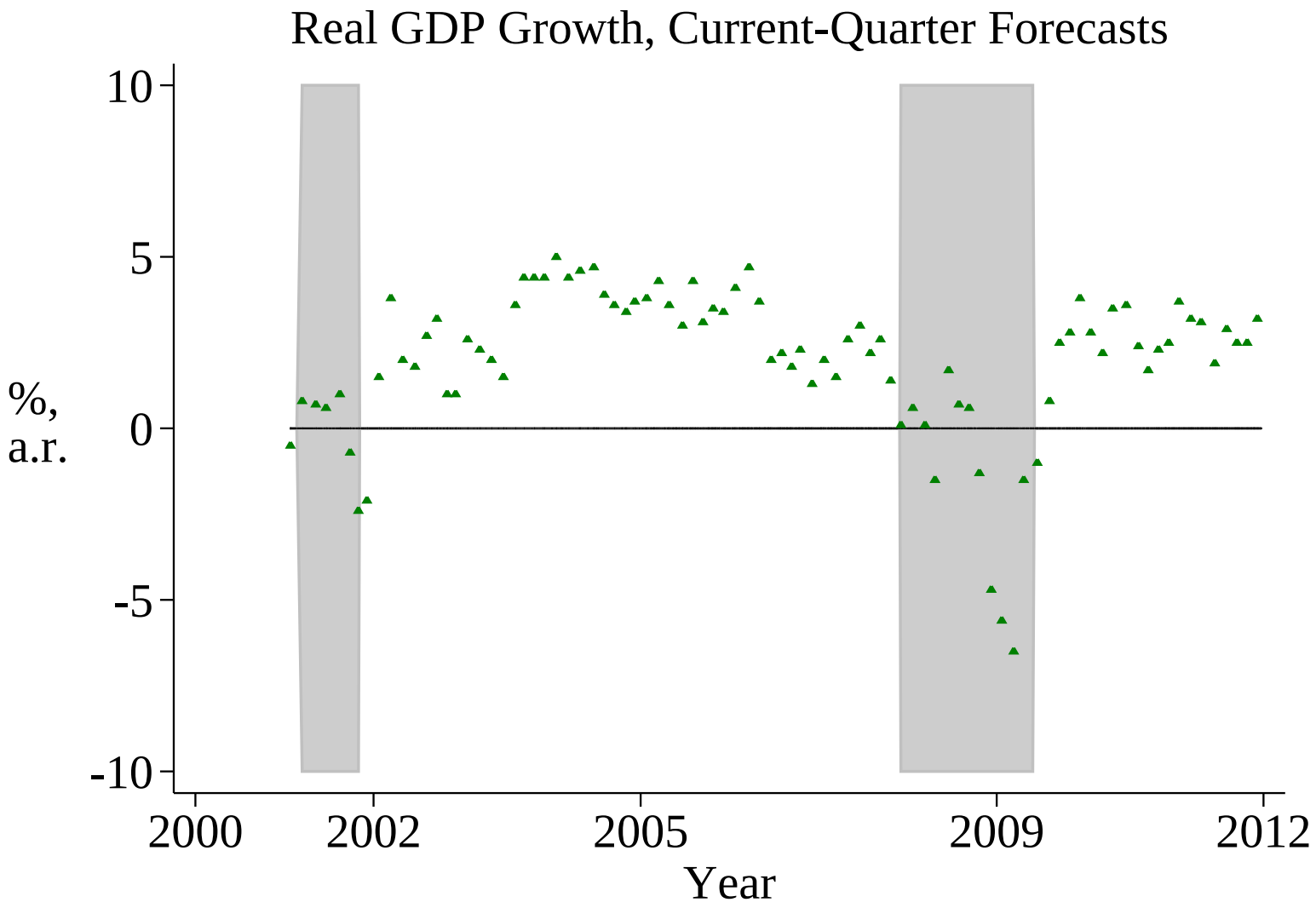
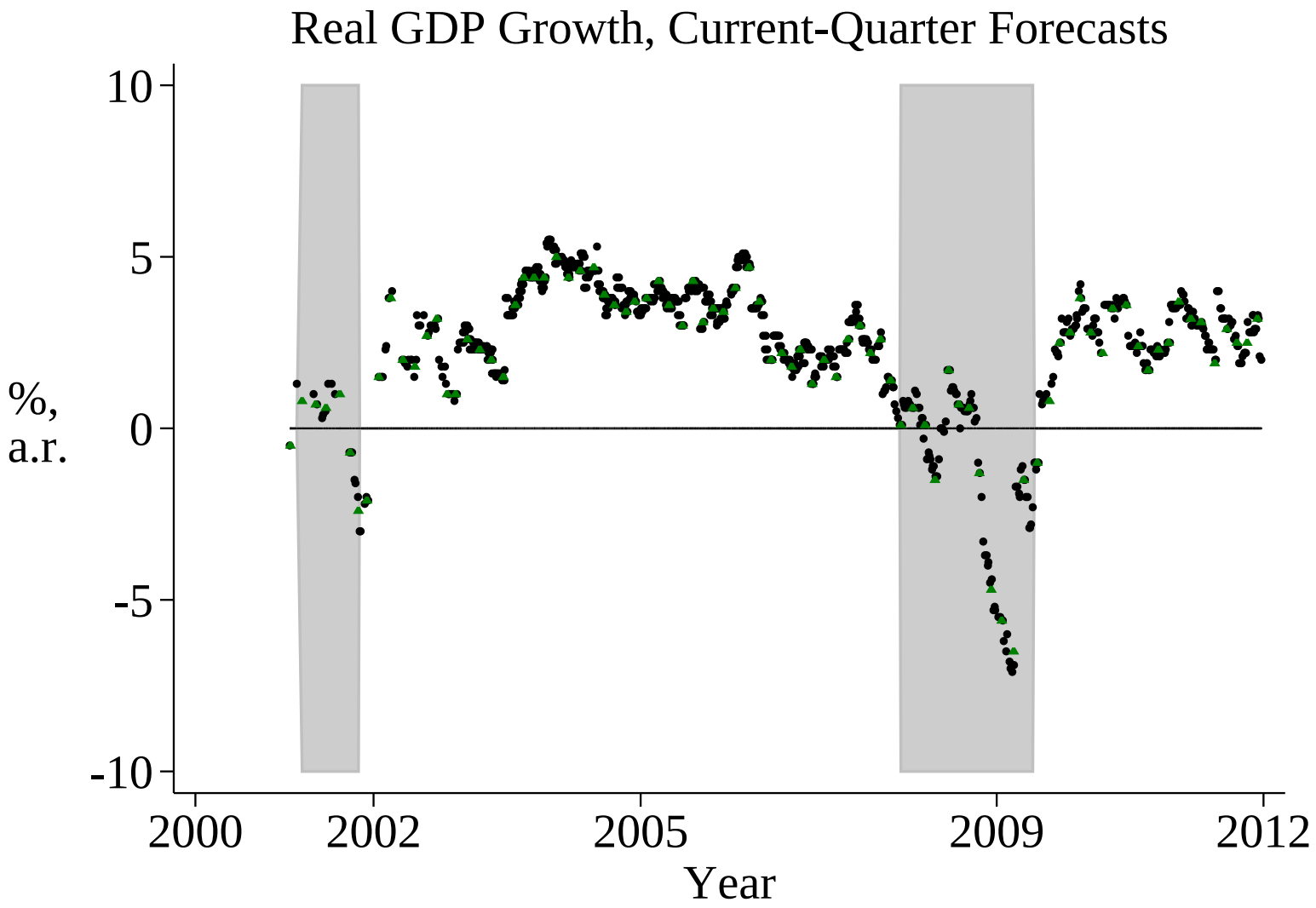
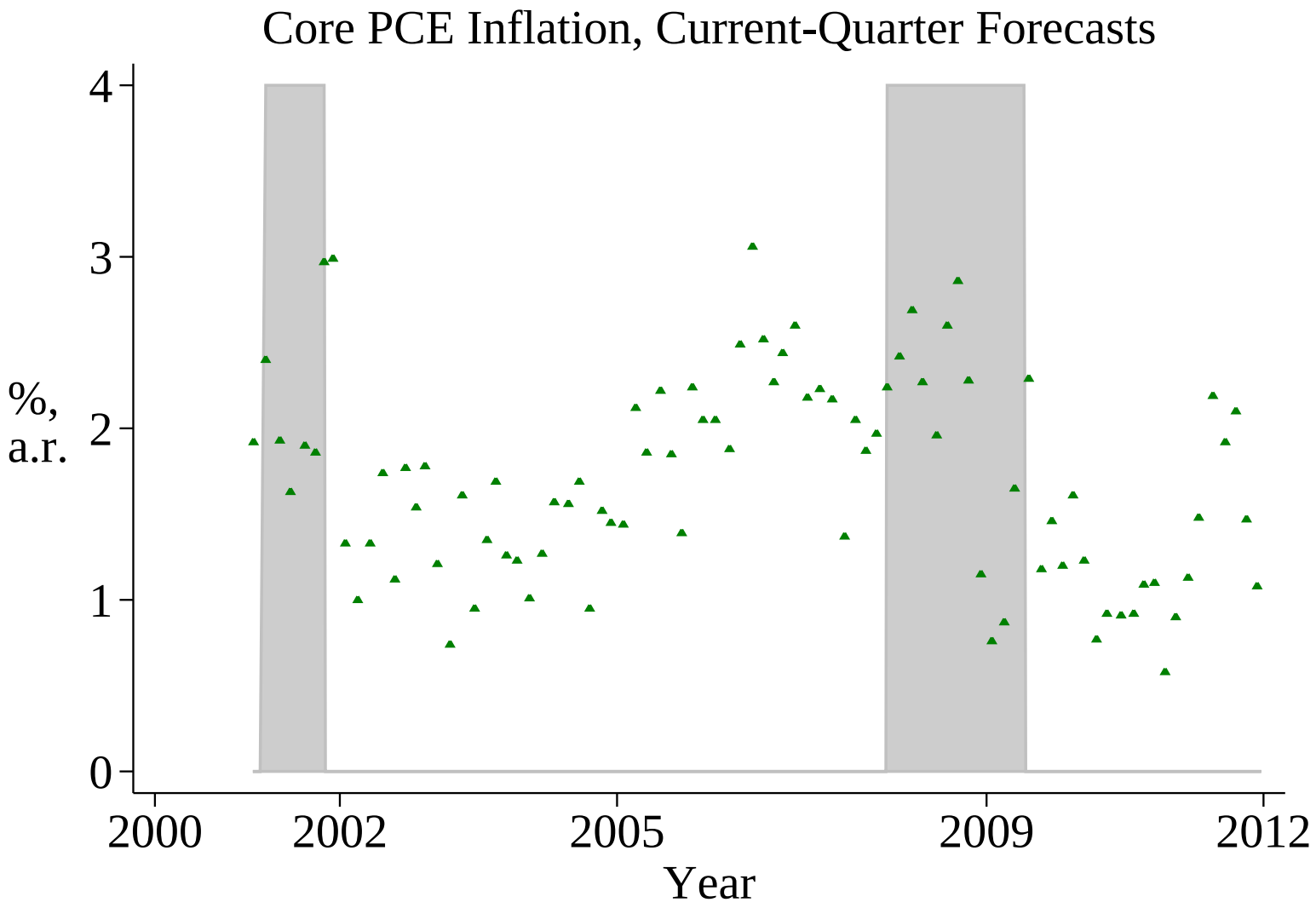


U.S. GDP - High-frequency dataset



U.S. Inflation - Tealbooks



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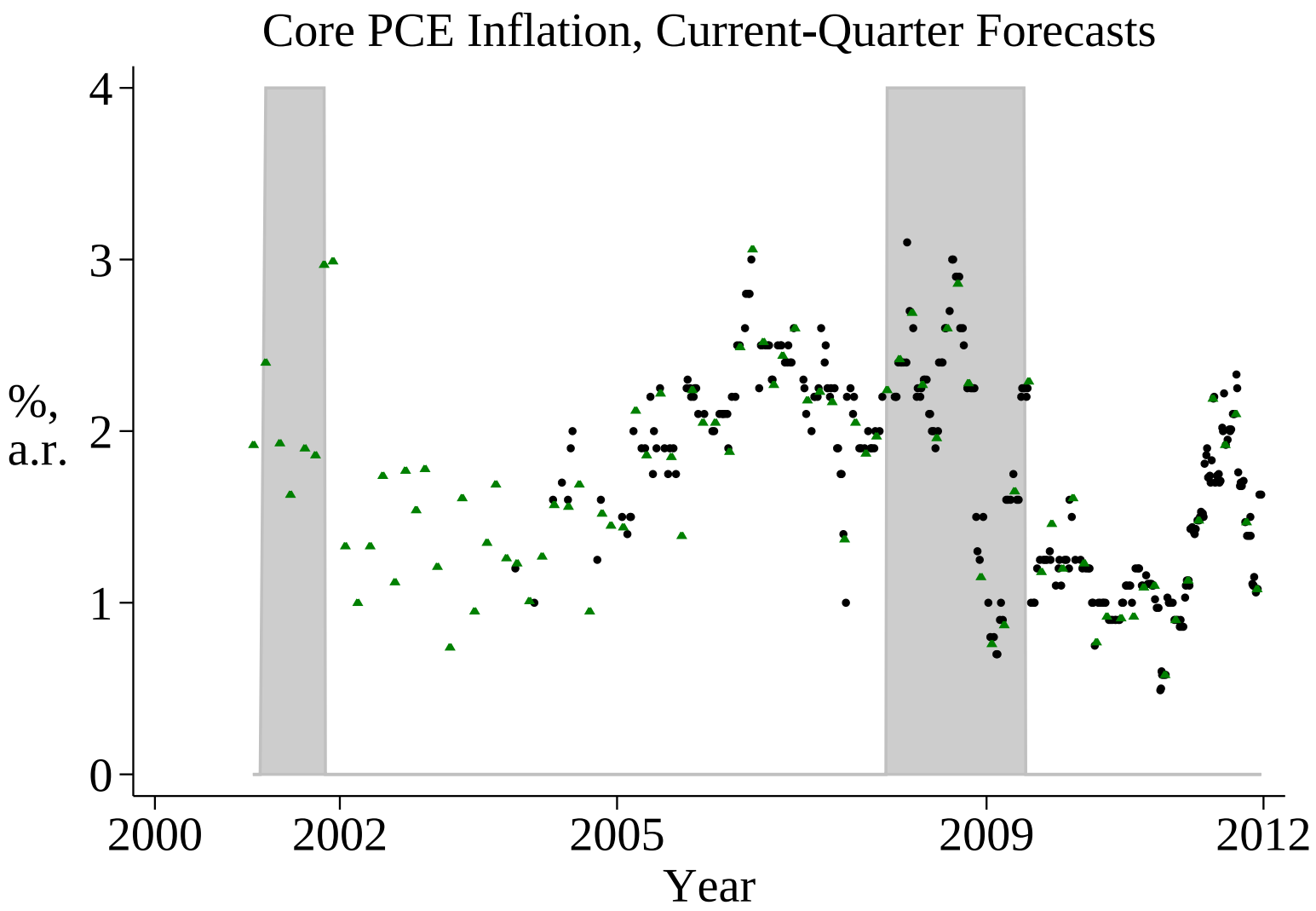
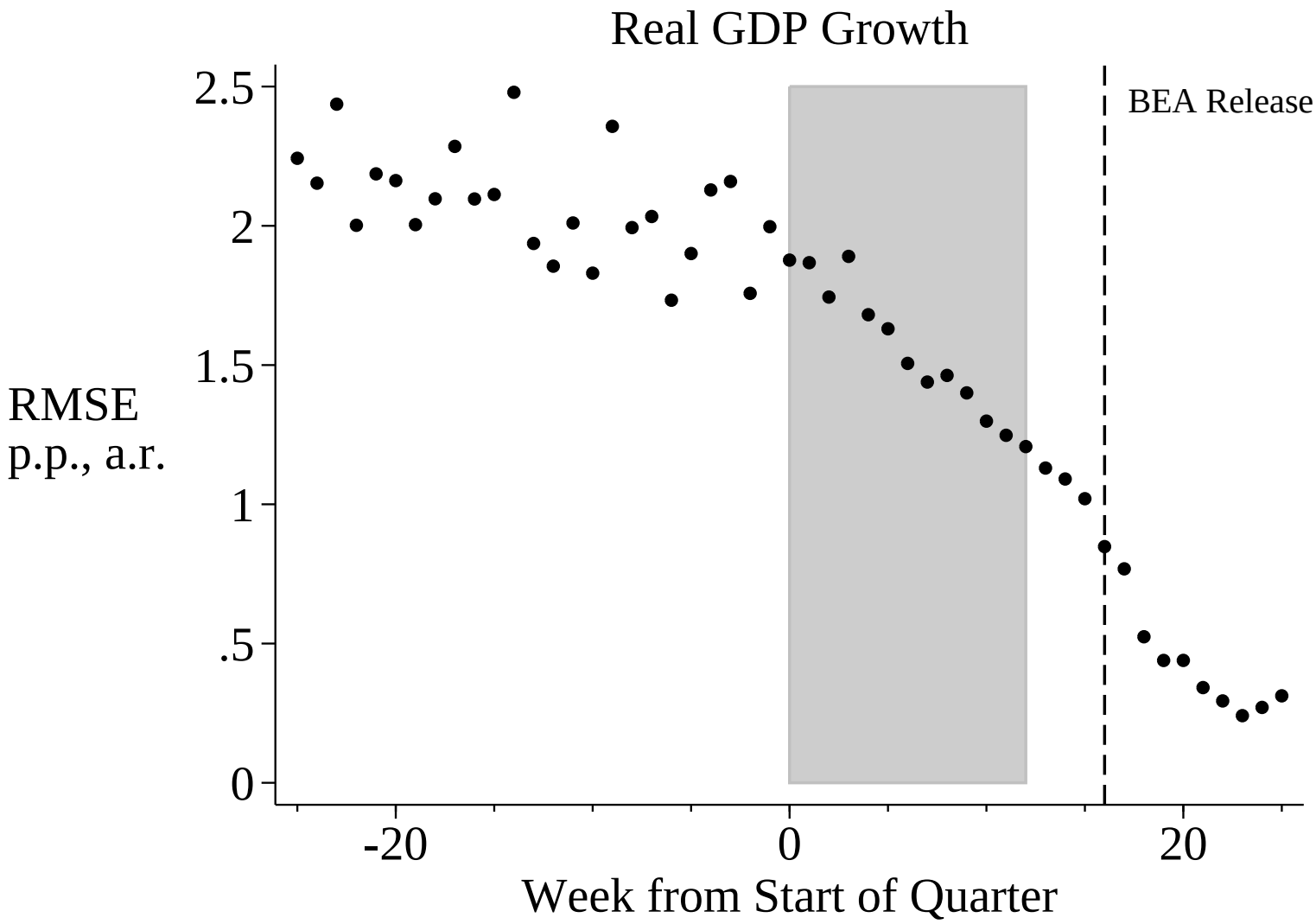


RMSEs - U.S. GDP


Real GDP Growth
BEA Release
RMSE
p.p., a.r.
2.5
2
1.5
1
.5
0
-20
0
20
Week from Start of Quarter

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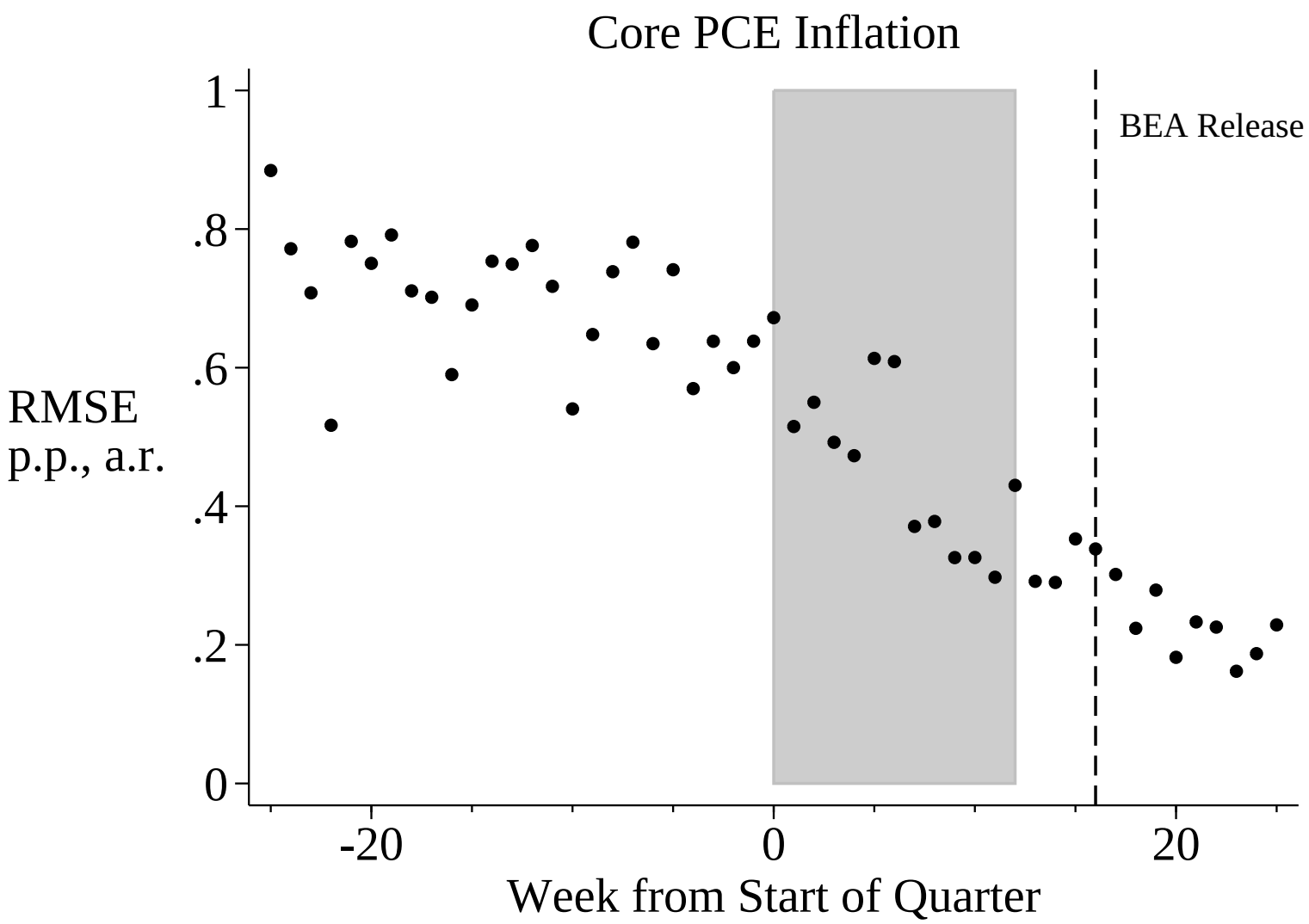

Method

- Are Fed staff forecast errors predictable?
- A lot of ways to go about analyzing these new data.
- Potential biases:
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Solution

- Pre-analysis plan.
- Registered on Open Science Framework.
  - https://osf.io/de3pe/

Predicting Average Forecast Errors

- $y_{i,t+h} - \hat{y}_{i,t+h|\tau} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$
  - y: BEA 3rd release U.S. GDP or inflation.
  - $\hat{y}$: staff forecast of y.
  - $t+h$: quarter t, h quarter ahead forecast.
  - τ: forecast made on day τ.

Predicting Average Forecast Errors

- $\overbrace{y_{i,t+h} - \hat{y}_{i,t+h|\tau}}^{Error} = \alpha_{i,h} + \beta_{i,h}\Delta\hat{y}_{i,t+h|\tau} + e_{i,t+h|\tau}$

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Predicting Average Forecast Errors

- Current-quarter U.S. GDP forecasts underrevise.
  - Should average 52% **bigger** revision, $p = 0.08$.
- Inflation backcasts overrevise.
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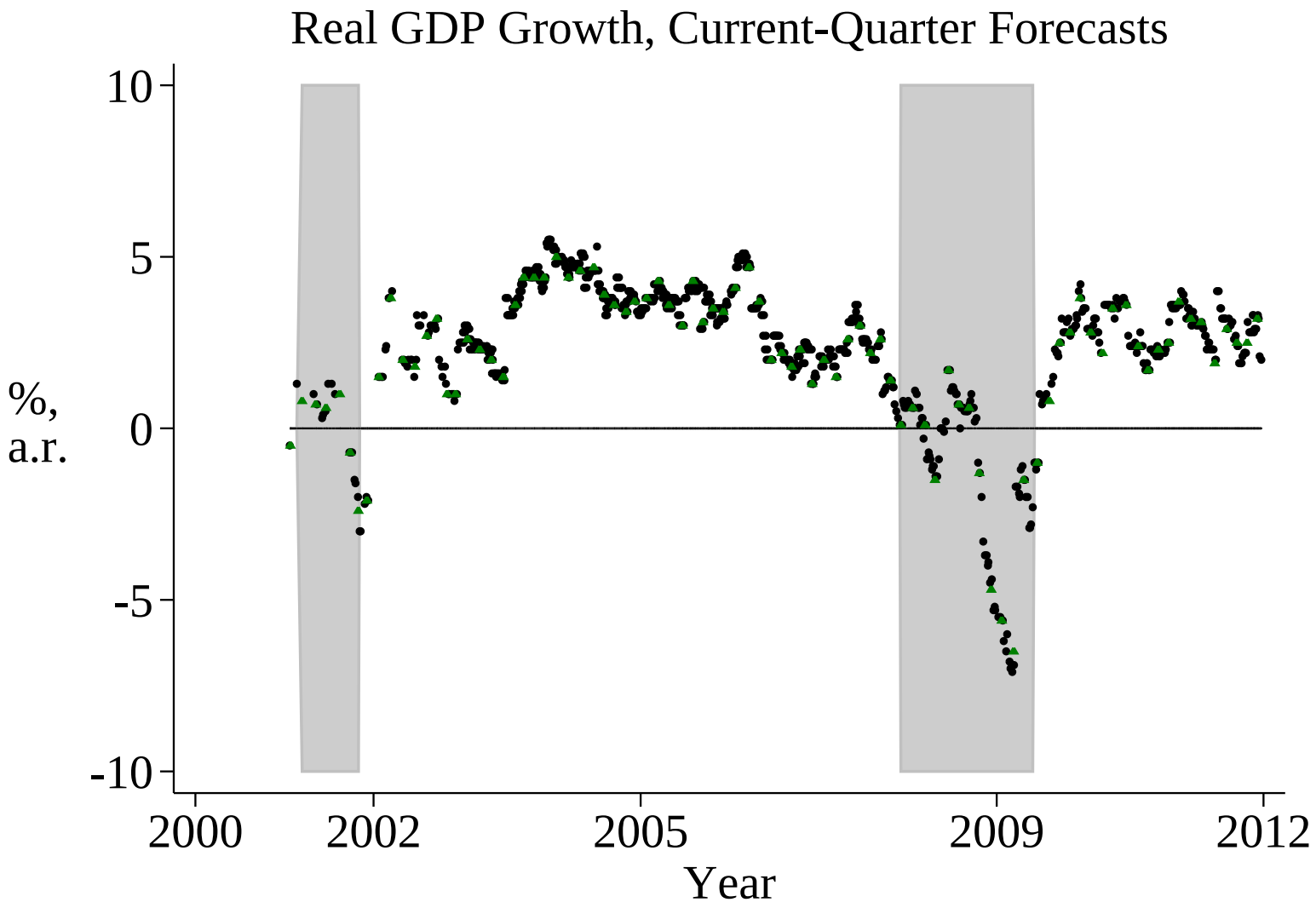
U.S. GDP - High-frequency dataset



Time-varying Behavior

- Can analyze forecasting between Greenbook/Tealbooks.

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- Tests for different behavior 2 weeks before vs. all other times.

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- $I(\tau)$ as 2 weeks is somewhat arbitrary.
- Pre-analysis plan.

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Time-varying Behavior - GDP

- Current-quarter GDP forecasts >2 weeks from FOMC meeting underrevise.
  - Should average 63% **bigger** revision, $p = 0.09$.
- Two quarter ahead GDP forecasts >2 weeks from FOMC overrevise.
  - Should average 55% *smaller* revision, $p = 0.04$.

Time-varying Behavior - Inflation

- Inflation backcasts <2 weeks from a FOMC overrevise.
  - Should average 49% *smaller* revision, $p = 0.04$

Can the Staff Use Financial Market Information?

- Index of return-weighted Bloomberg macroeconomic forecast errors.
- $$news_\tau = \sum_{s=0}^{70} \sum_{i=1}^{I} \left(r_{i,\tau} \times \frac{|y_{i,\tau} - \tilde{y}_{i,\tau-1}|}{\tilde{\sigma}_{i\tau}} \right)_{\tau-s} \quad (1)$$
- $\frac{|y_{i,\tau} - \tilde{y}_{i,\tau-1}|}{\tilde{\sigma}_{i\tau}}$: Normalized Bloomberg forecast error.
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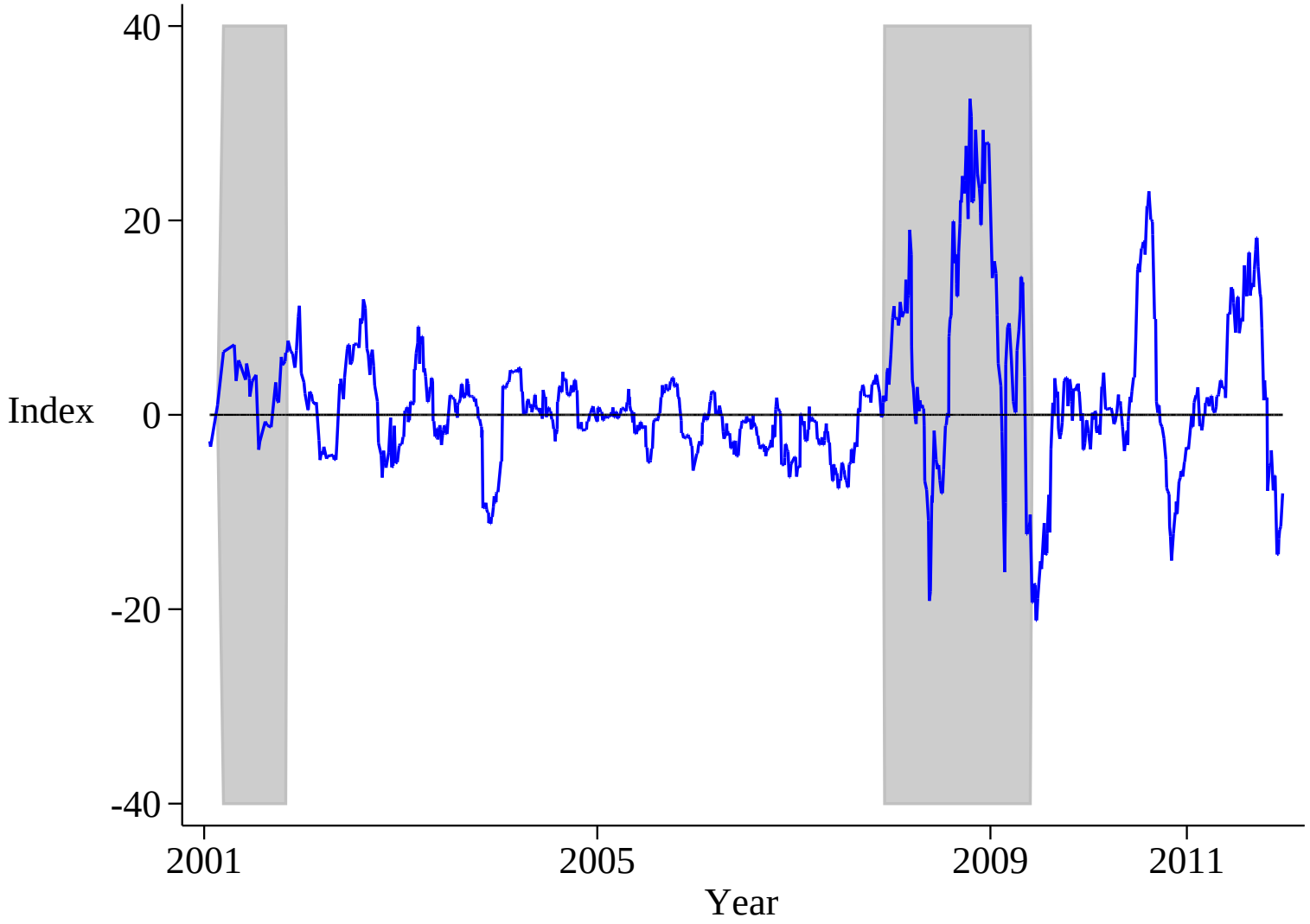

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- $news_\tau$ does not predict inflation forecast errors.

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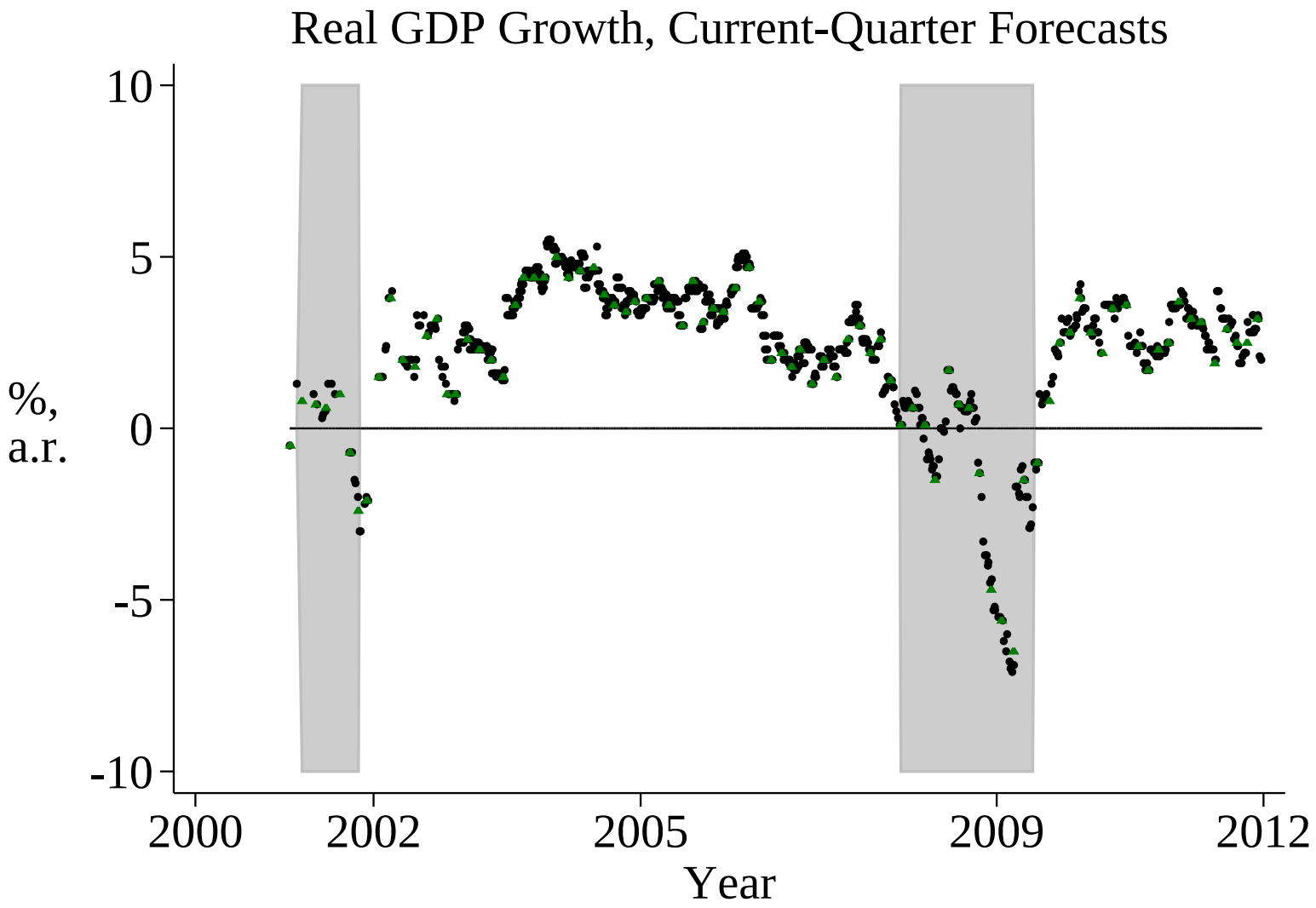
Real GDP Growth, Current-Quarter Forecasts
10
5
0
-5
-10
%,
a.r.
2000
2002
2005
2009
2012
Year