Discussion of Gertler and Karadi, "Monetary Policy Surprises, Credit Costs, and Economic Activity"

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VAR Notation

Structural VAR:

$$AY_t = \sum_{j=1}^{p} C_j Y_{t-j} + \varepsilon_t$$

Reduced-form VAR:

$$Y_t = \sum_{j=1}^{p} B_j Y_{t-j} + u_t$$

where $u_t = S\varepsilon_t,\ S = A^{-1},\ B_j = A^{-1}C_j$.

Let s denote column of S corresponding to MP shock, ε_t^p.

Compute impulse response to MP shock using

$$Y_t = \sum_{j=1}^{p} B_j Y_{t-j} + s\varepsilon_t^p$$

How to Identify s

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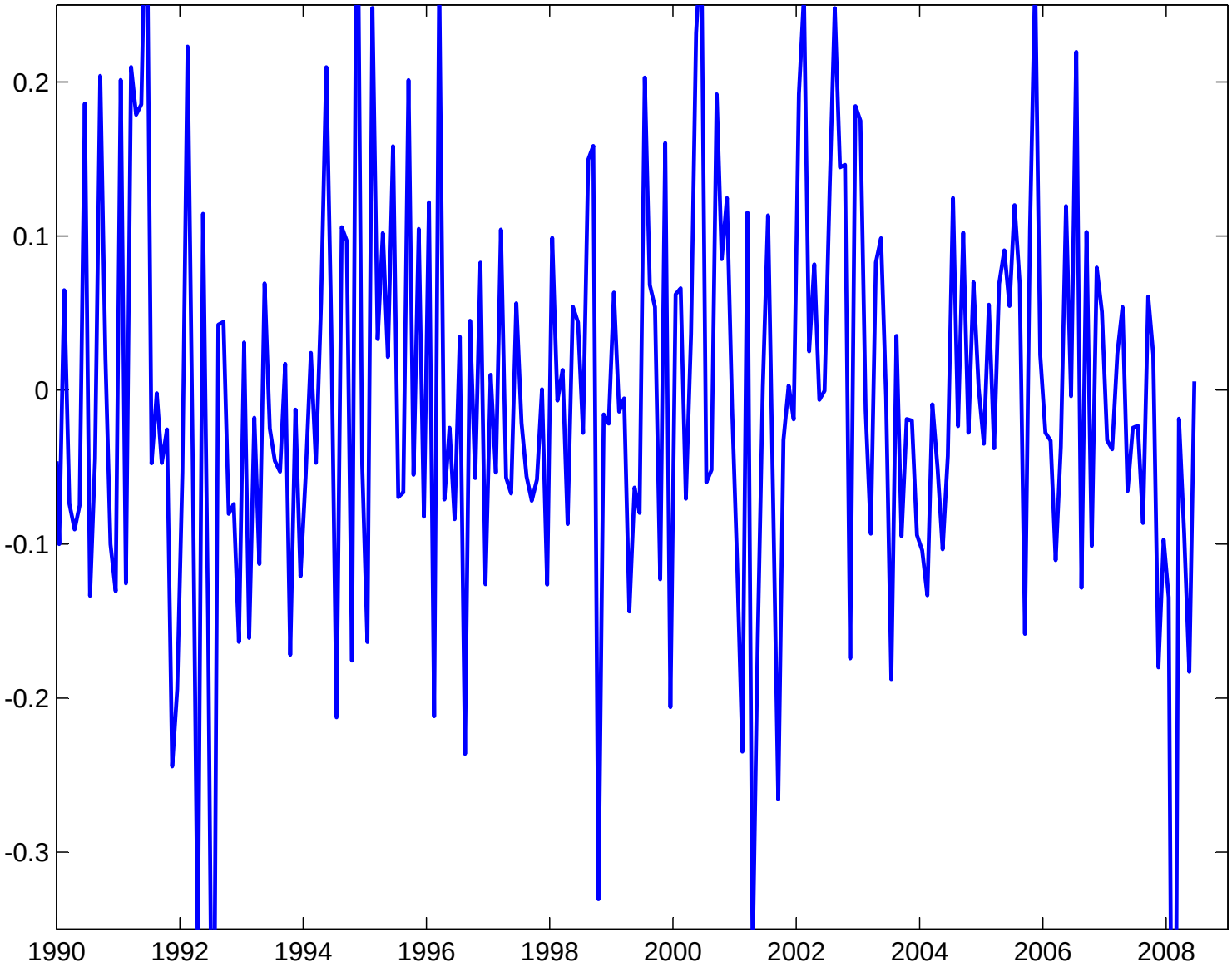
Idea:

- Surprise component of FOMC announcements plausibly exogenous to other variables in the VAR at time t
- Regress u_t^{-p} on u_t^p using IV to estimate s

Stock-Watson (2012), Bagliano-Favero (1999), Cochrane-Piazzesi (2004), Romer-Romer (1989)

Reduced-Form u_t^p and High-Frequency Instrument



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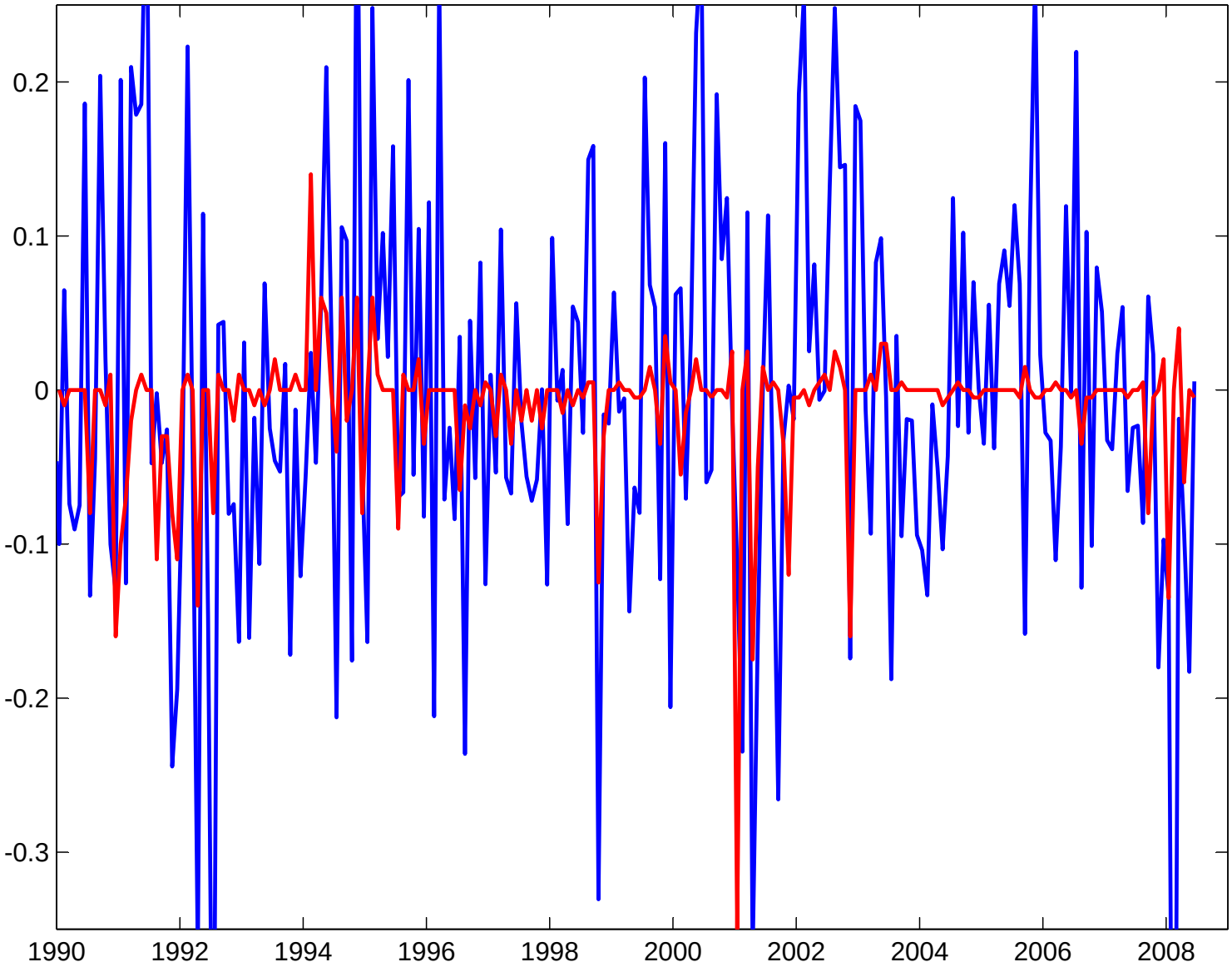

Regress u_t^{-p} on u_t^p using IV to estimate s

	coefficient	t-statistic
First-stage regression results for u_t^p:	1.10	(6.91)

Second-stage IV results for u_t^{-p}:

	coefficient	t-statistic
CPI residuals	-0.01	(-0.03)
IP residuals	-0.36	(-0.66)
GZ spread residuals	0.31	(1.68)

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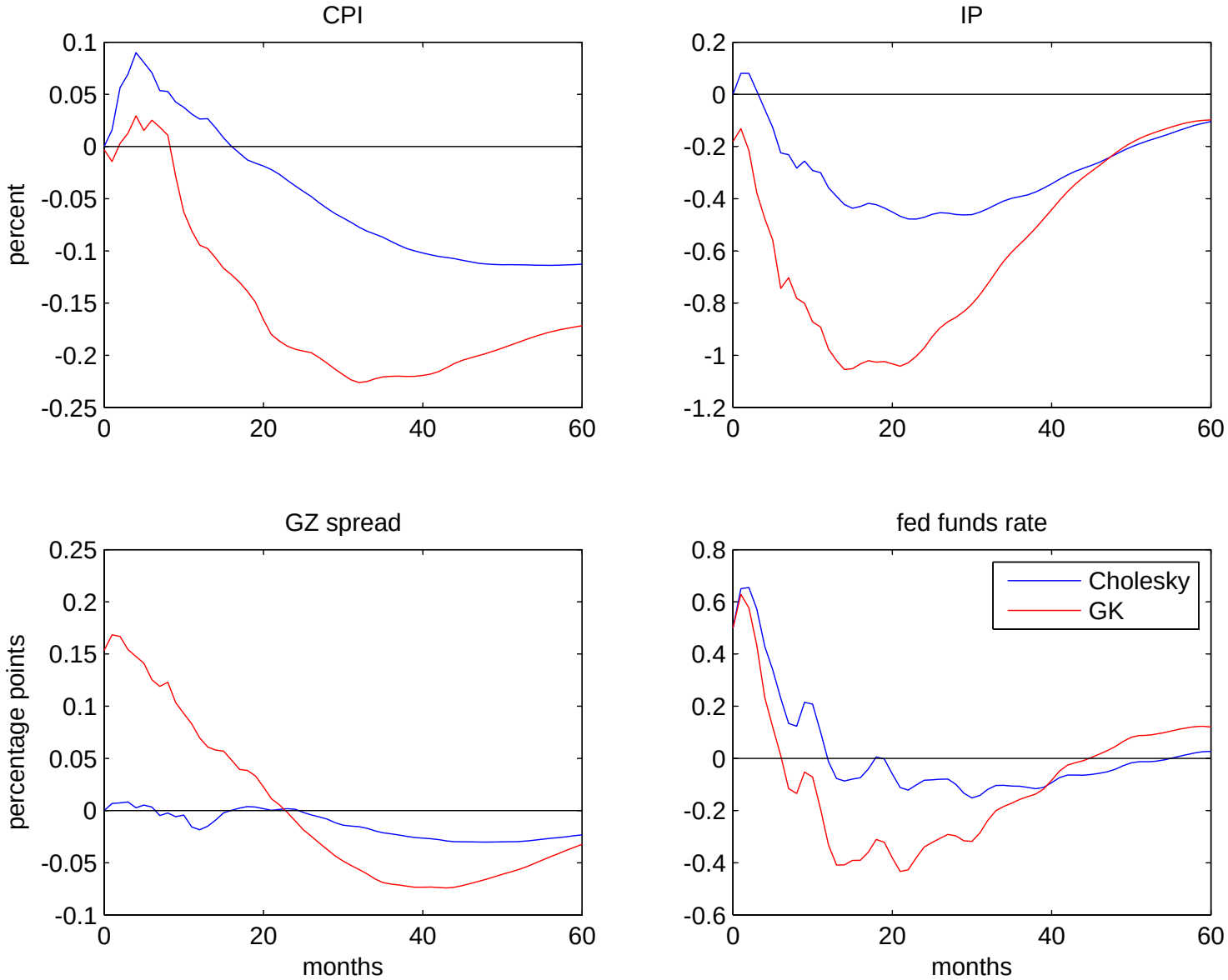
Normalizing MP shock to 50 bp gives

$$\hat{s} = \begin{bmatrix} -0.00 \\ -0.18 \\ 0.16 \\ 0.50 \end{bmatrix}$$

Impulse Responses to Monetary Policy Shock



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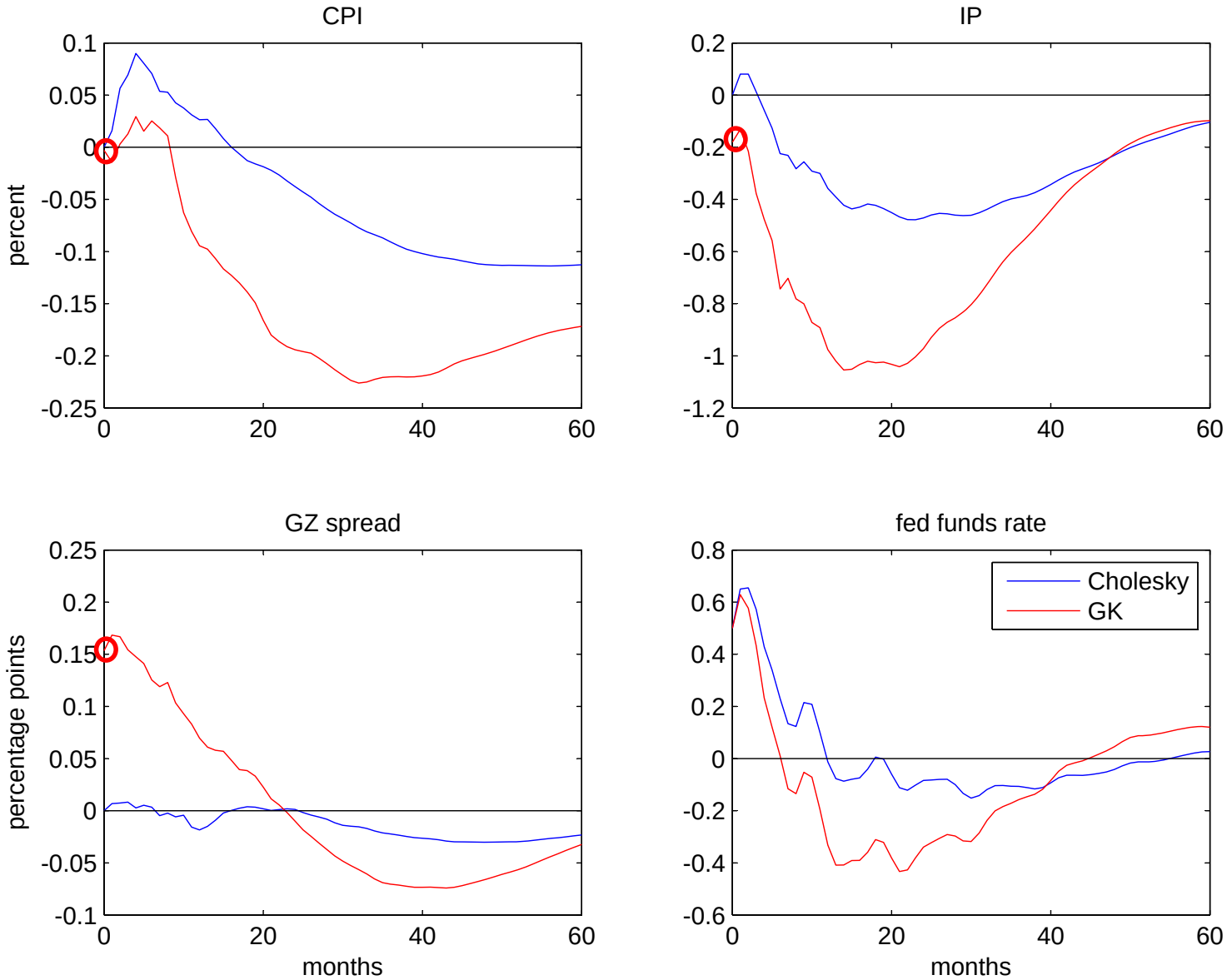
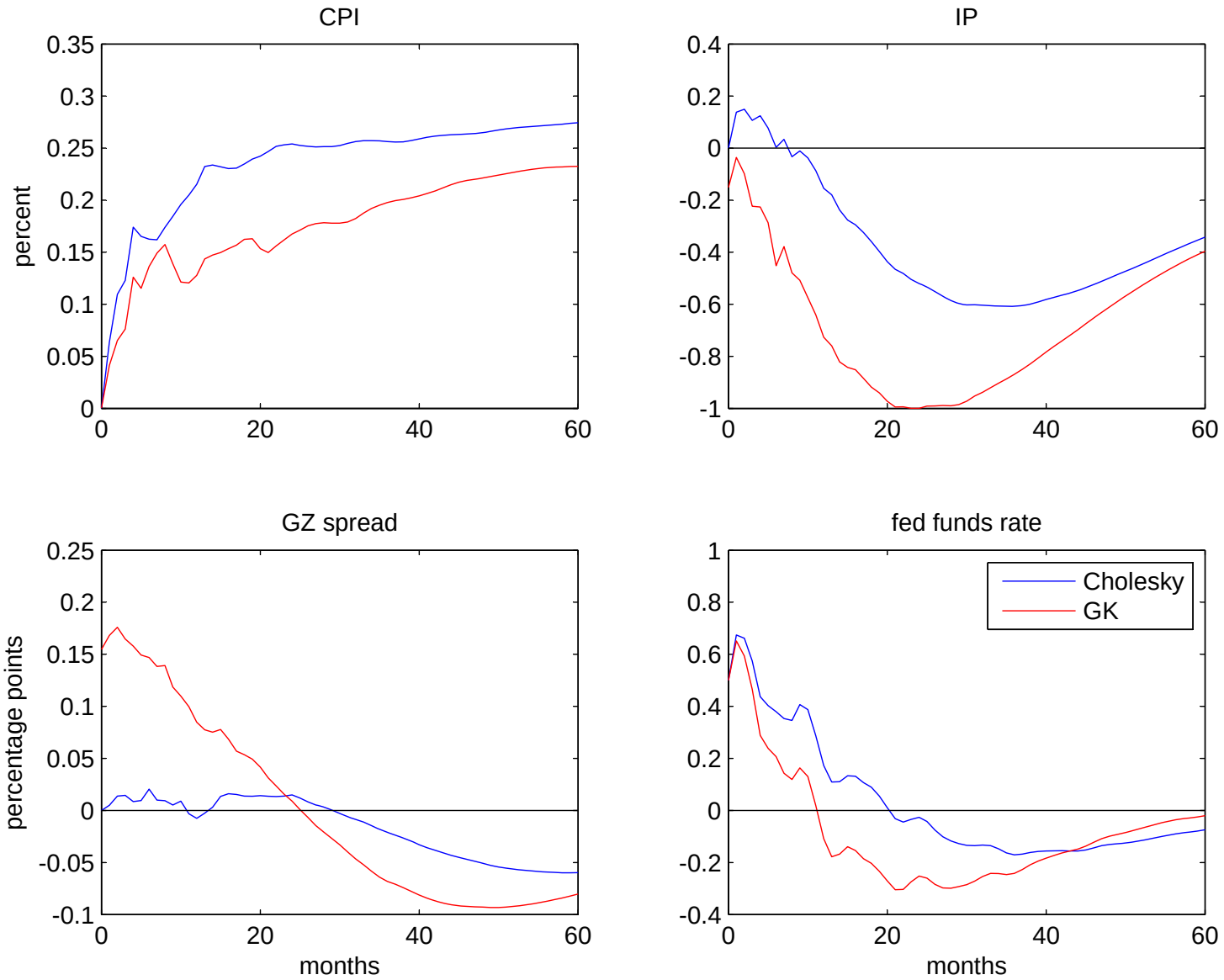
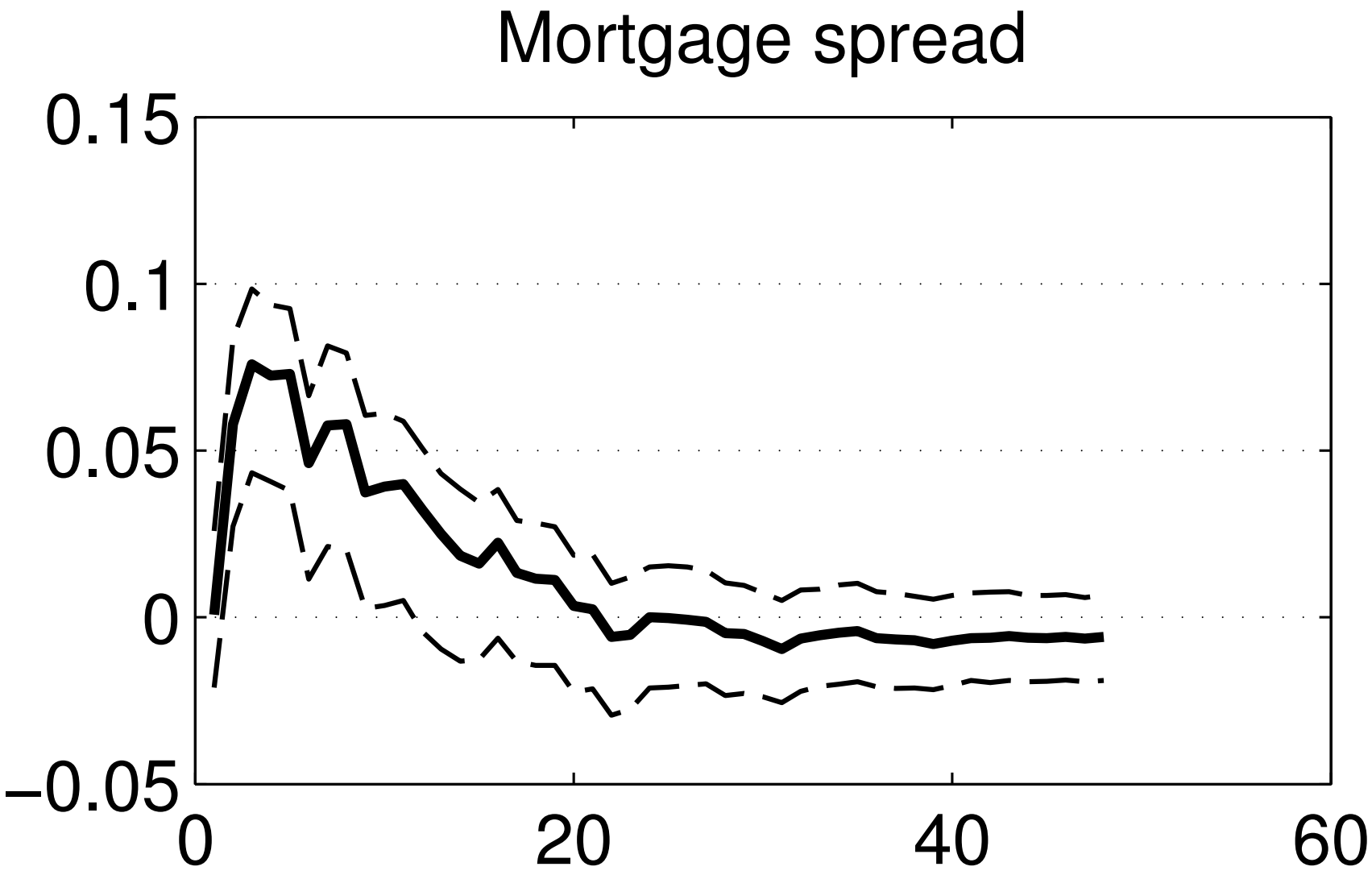


Starting Sample in Jan 1980 instead of Jun 1979



Impulse Response of Credit Spreads



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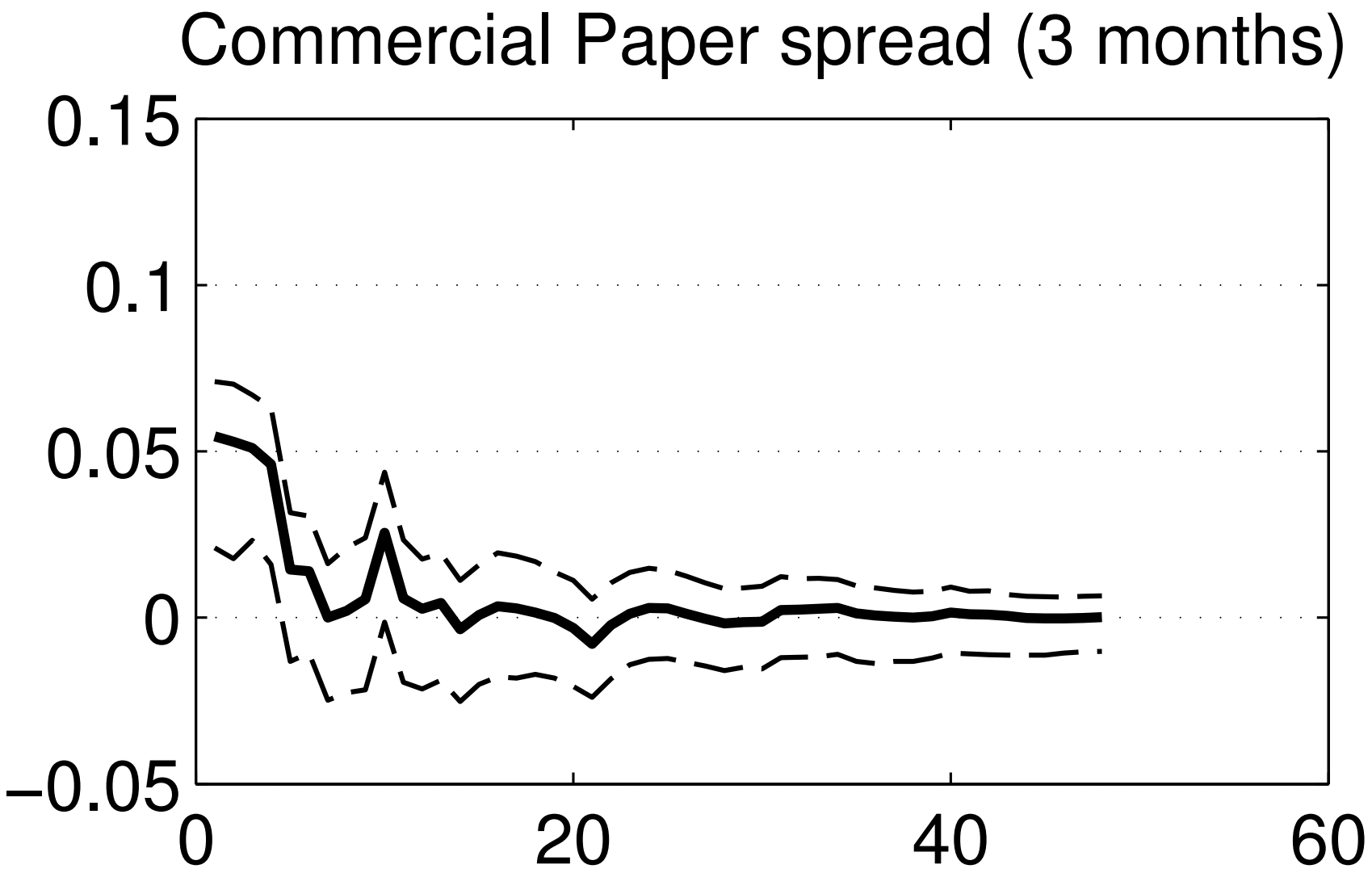
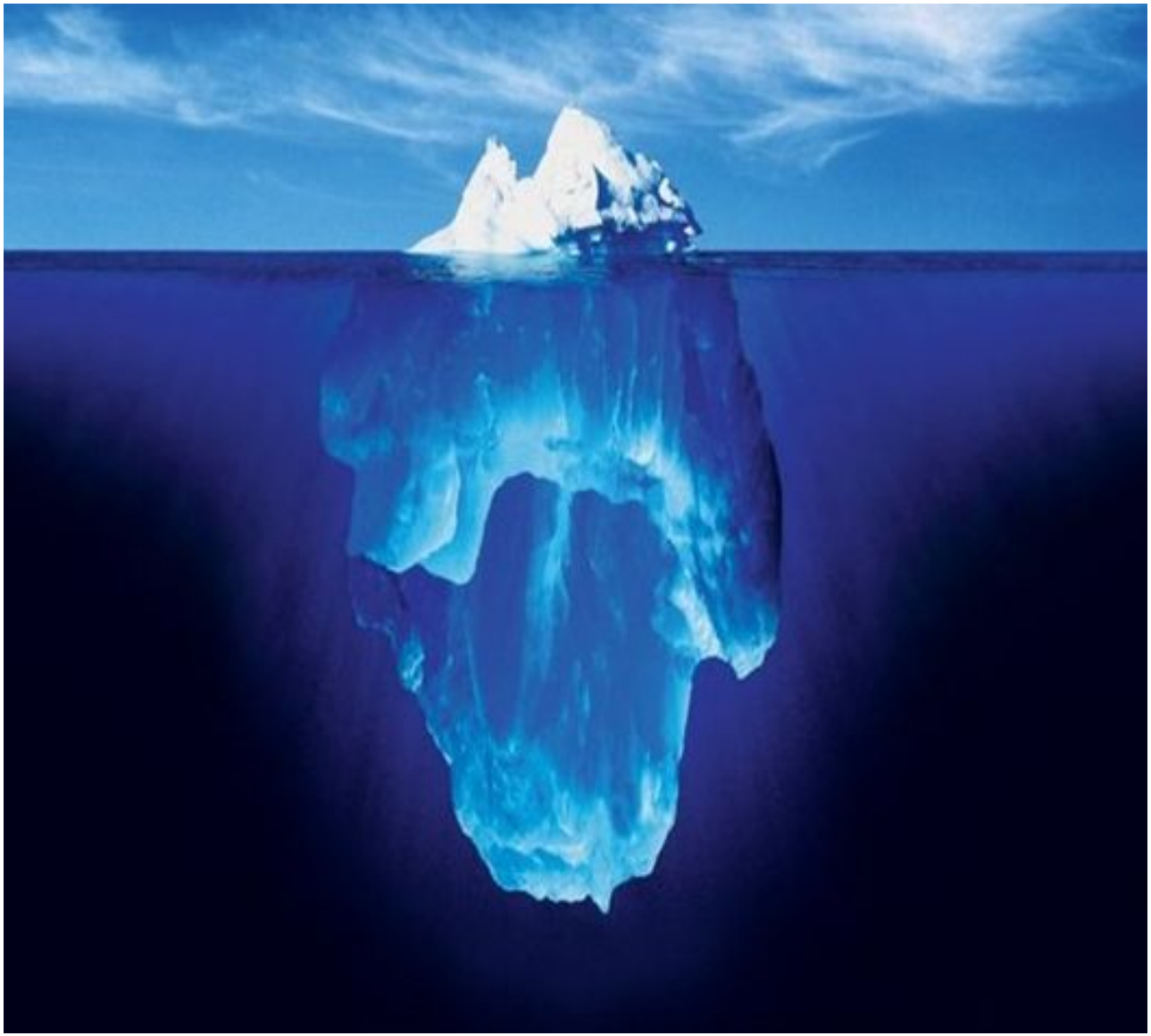
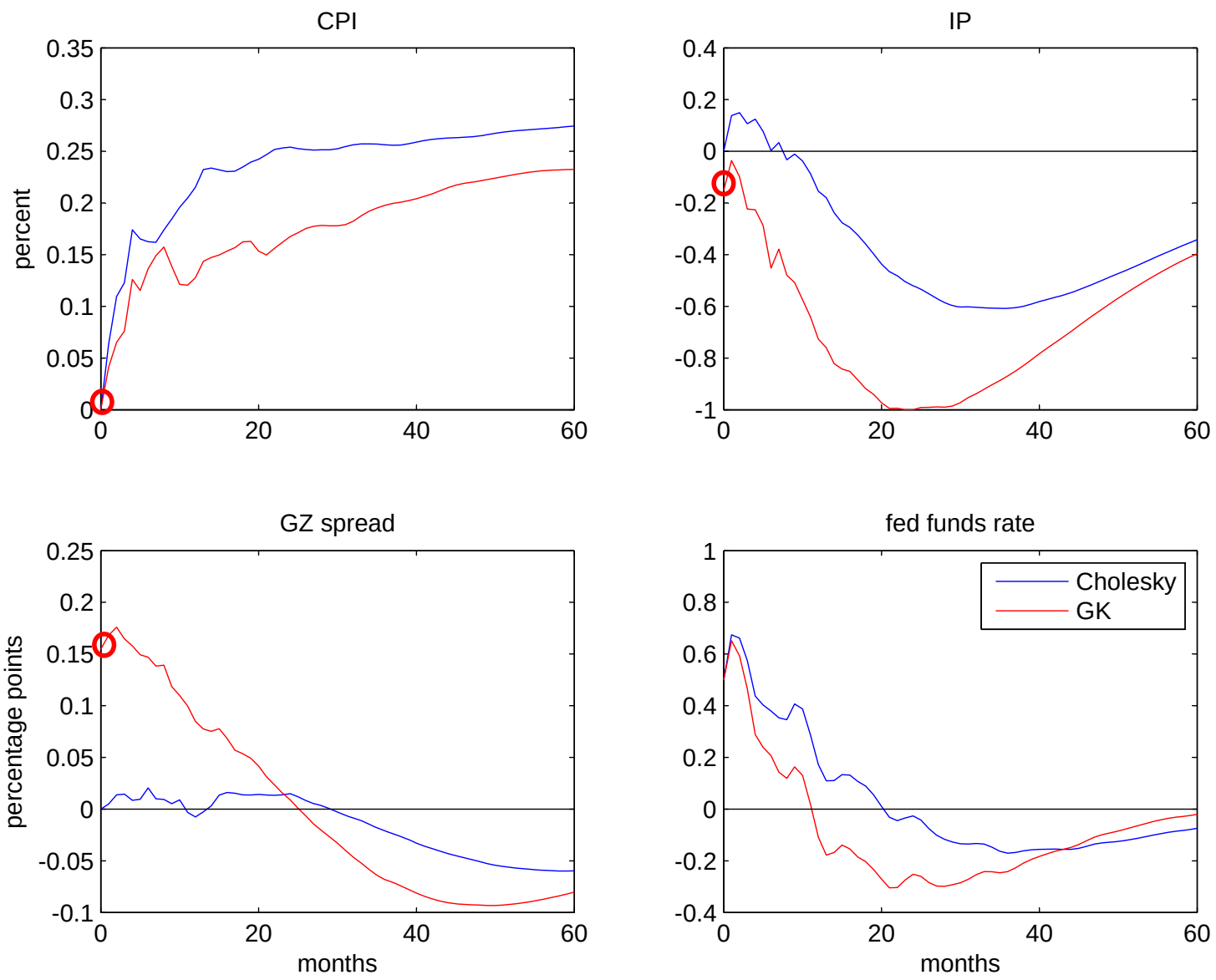


High-Frequency Futures Data



An Alternative High-Frequency Identification of *s*



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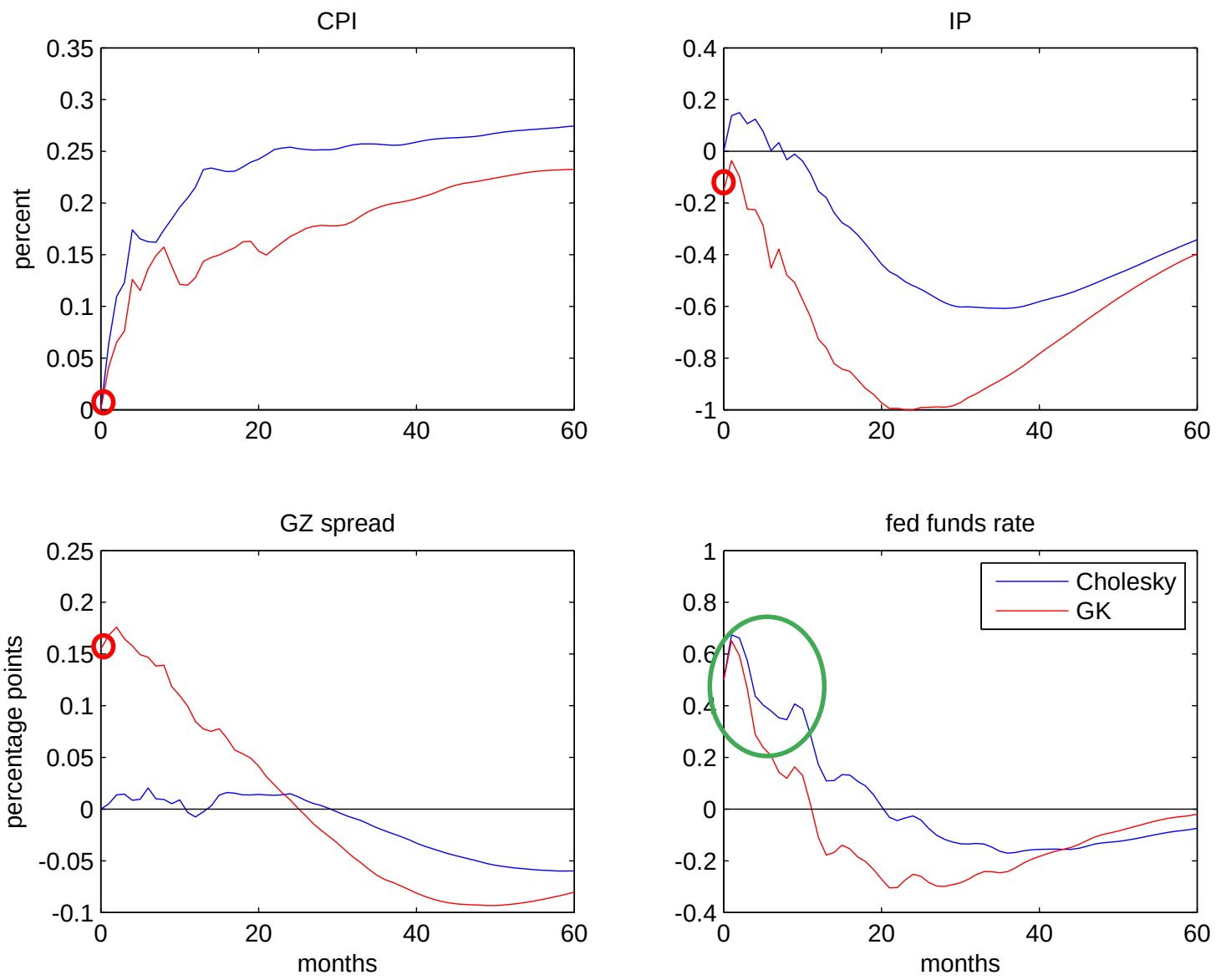

Faust-Swanson-Wright

High-frequency responses to FOMC announcements:

	coefficient	t-statistic	R^2
FF2	0.74	(39.04)	.87
FF3	0.61	(24.52)	.73
FF4	0.63	(20.11)	.63
ED2	0.57	(15.38)	.48
ED3	0.53	(12.27)	.37
ED4	0.45	(9.42)	.25
2-year Treasury	0.39	(9.20)	.29

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Term premia could change at longer end, but signal-to-noise ratio in general very high

Piazzesi-Swanson (2008)

Faust-Swanson-Wright

High-frequency changes around FOMC announcements an indicator for Δ market expectations of future path of funds rate

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Recall that impulse response to MP shock is given by

$$s,\ Bs,\ B^2s,\ B^3s,\ B^4s,\ \ldots$$

(using first-order companion form for B)

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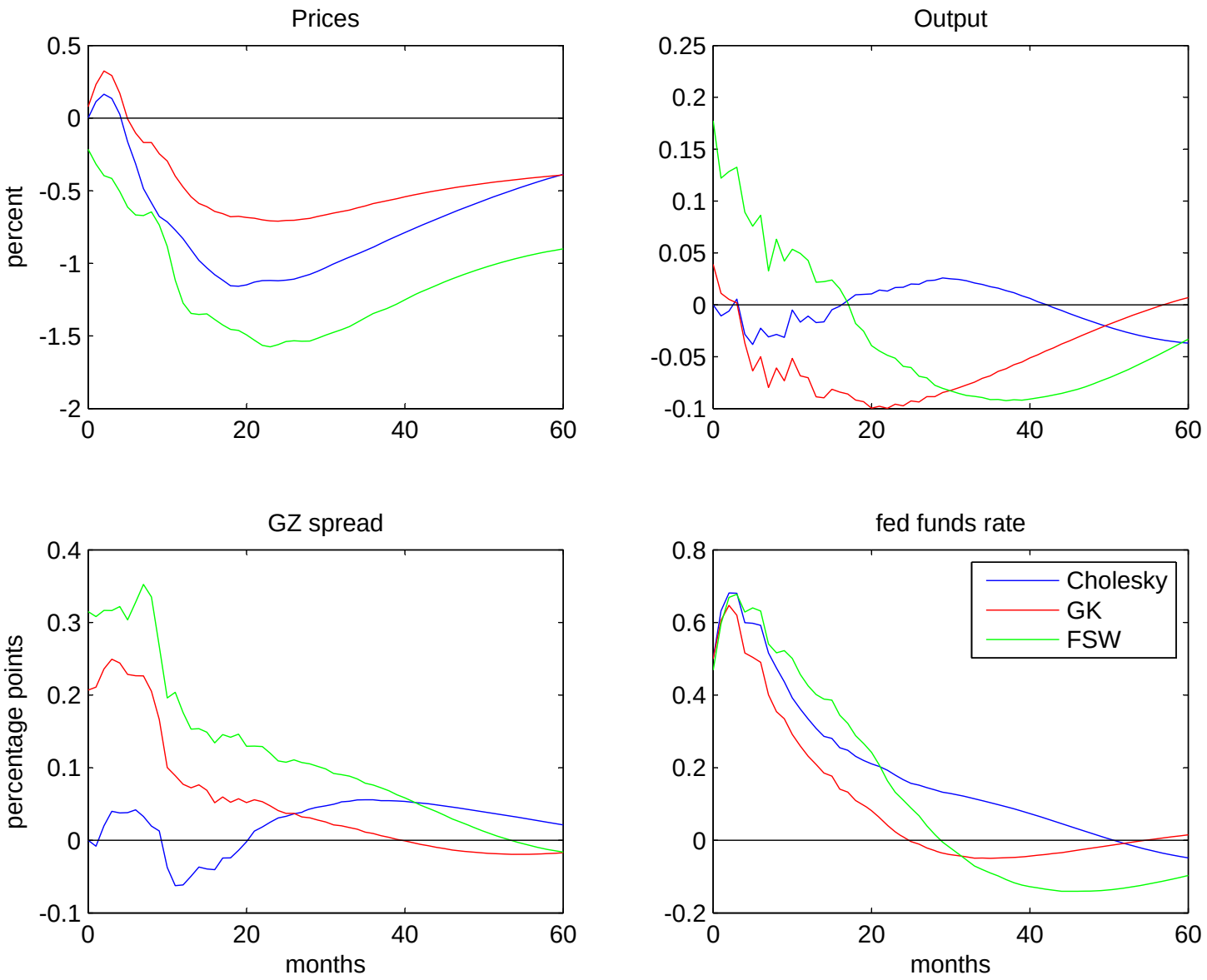
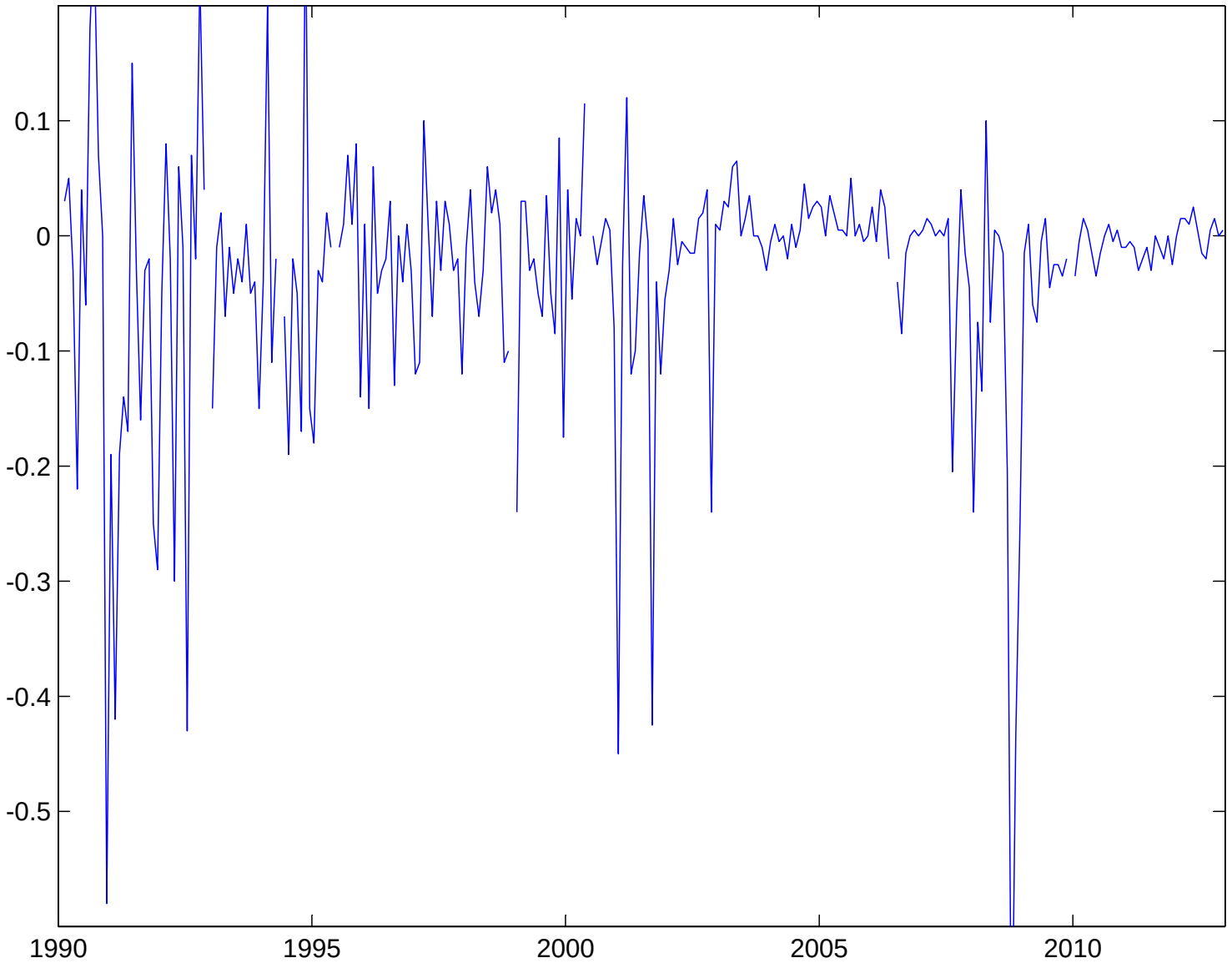
Caveats:

- time-varying term premia
- high powers of B are problematic
- collinearity of futures responses

Faust-Swanson-Wright Identification



Fed Funds Futures One-Month-Ahead Forecast Errors



One-Dimensional Monetary Policy?

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> *"Should we use the federal funds rate or the 1-year Treasury yield as the measure of monetary policy?"*

Gürkaynak-Sack-Swanson

Table 2. Tests of Number of Factors Characterizing Monetary Policy Announcements

	Treasury Yields and Stock Prices				Futures Rates with ≤1 Year to Expiration			
H_0: Number of Factors Equals	Wald Statistic	χ^2 Degrees of Freedom	p-value	Number of Obs.	Wald Statistic	χ^2 Degrees of Freedom	p-value	Number of Obs.
0	46.72	15	.00004	120	36.61	10	.00007	138
1	21.41	9	.011	120	17.19	5	.004	138
2	4.36	4	.360	120	1.06	1	.304	138

Note: Test is from Cragg and Donald (1997) and tests the null hypothesis of N_{H0} factors against the alternative of $N > N_{H0}$ factors. Sample: January 1990–December 2004 (July 1991–December 2004 for Treasuries). Treasury yields comprise three-month, six-month, two-year, five-year, and ten-year yields, stock prices the S&P 500. Futures rates comprise one- and three-month-ahead federal funds futures rates (with scale adjustment for timing of FOMC meetings within the month) and two-, three-, and four-quarter-ahead eurodollar futures rates.

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These two dimensions can be interpreted as:

- Changes in the federal funds rate
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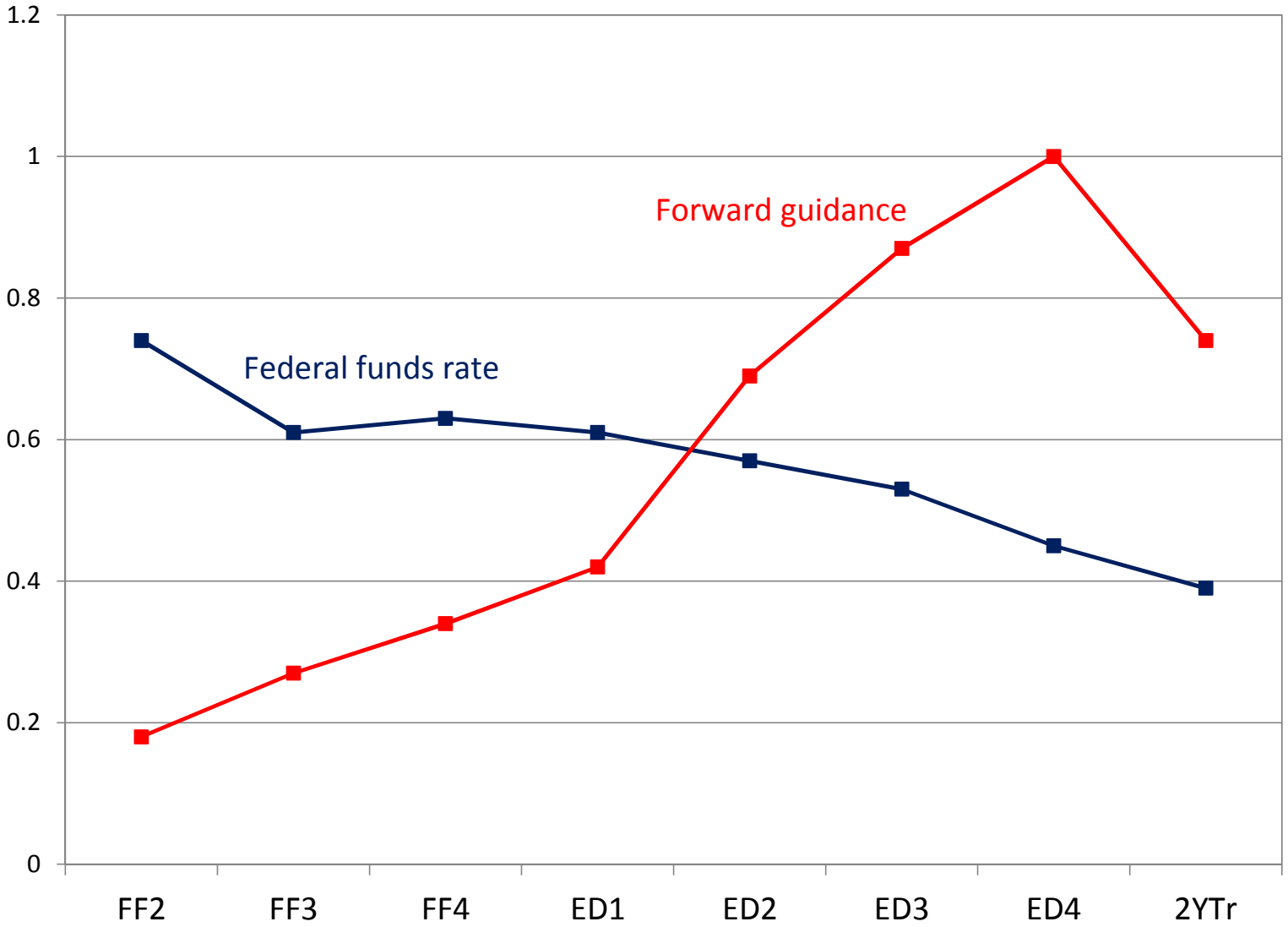
Since 2008, there is arguably a third dimension: QE

Effects of Forward Guidance Surprises

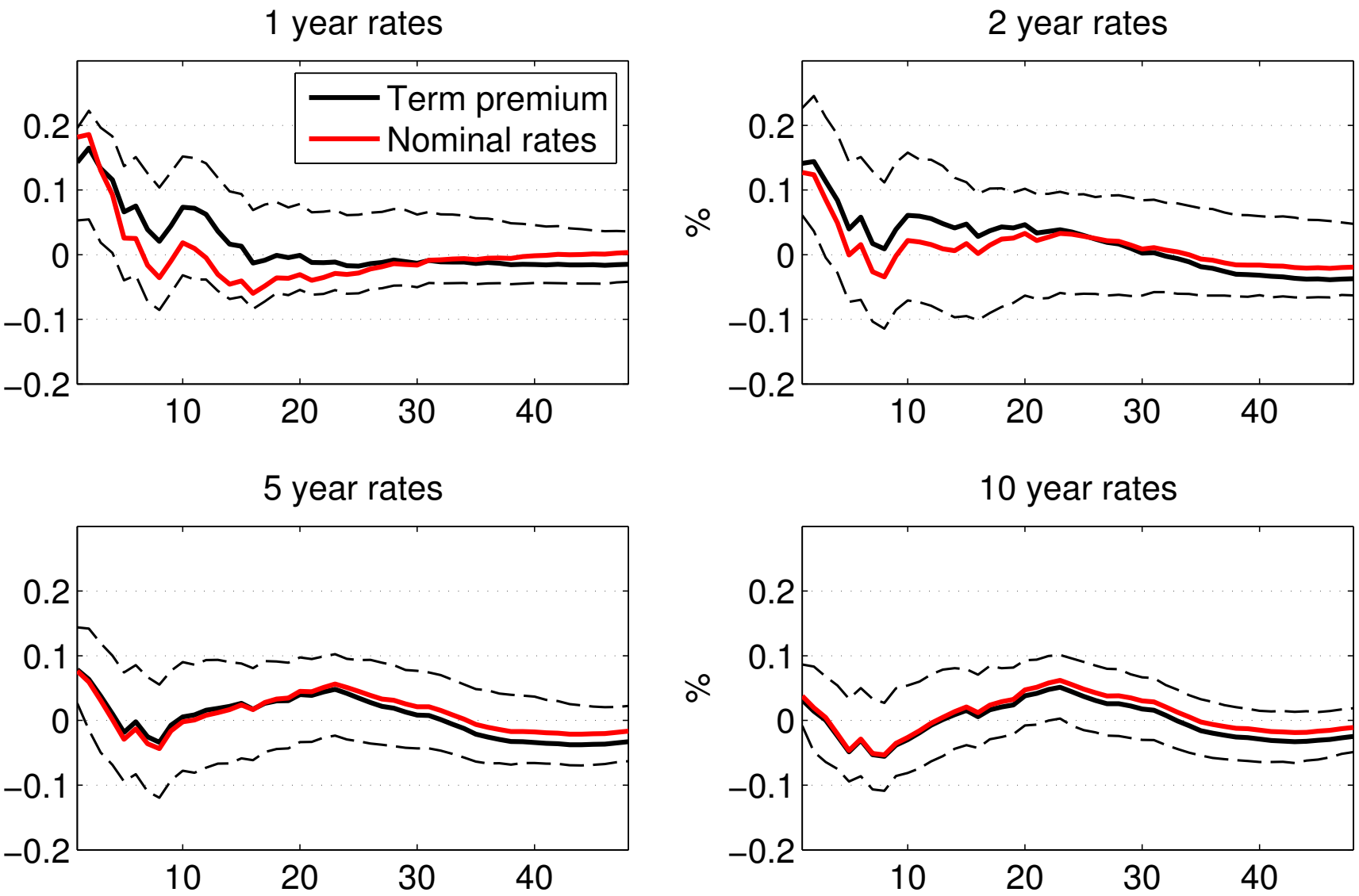
High-frequency responses to GSS forward guidance surprises:

	coefficient	t-statistic	R^2
FF2	0.18	(2.49)	.00
FF3	0.27	(4.21)	.02
FF4	0.34	(4.95)	.04
ED1	0.42	(6.16)	.11
ED2	0.69	(11.91)	.35
ED3	0.87	(16.81)	.53
ED4	1.00	(24.19)	.71
2-year Treasury	0.74	(17.65)	.61

Responses to Fed Funds Rate and Forward Guidance



GK Term Premium Results



Summary of Comments

1. GK analysis of credit spreads makes a lot of sense, is done very well
2. Could make even more use of high-frequency data
3. Assumption of unidimensional monetary policy is problematic
4. Term premium results driven by assumption that forward guidance is the only MP shock?
5. Technical quibbles:
   1. use inflation, output factors (not CPI, IP)
   2. start sample in 1984 (after reserves targeting)