Comments on "Monetary Policy and Borrowing Costs at the ZLB"

James D. Hamilton

University of California at San Diego

Event study methodology

- Nov 25, 2008: LSAP announced
- Dec 1, 2008: Bernanke: "could purchase longer-term Treasury… in substantial quantities"
- Dec 16, 2008: FOMC "stands ready to expand its purchases of agency debt and mortgage-backed securities"
- Mar 18, 2009: Announced new purchases of MBS and agency debt

10-year yield fell 170 bp Nov 3 - Dec 31

10-year yield
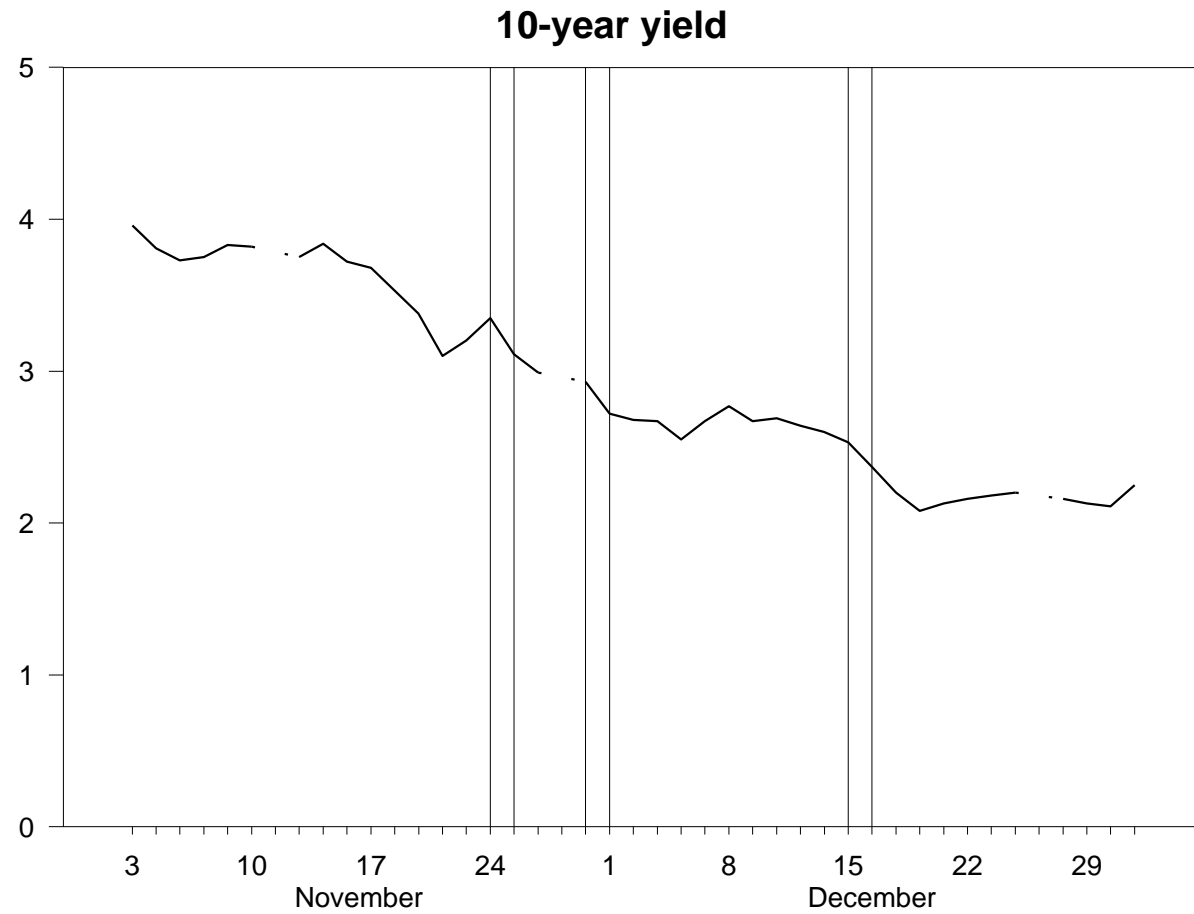
fell 61 bp on 3 indicated dates

Oil price declined 30% Nov 3 - Dec 31
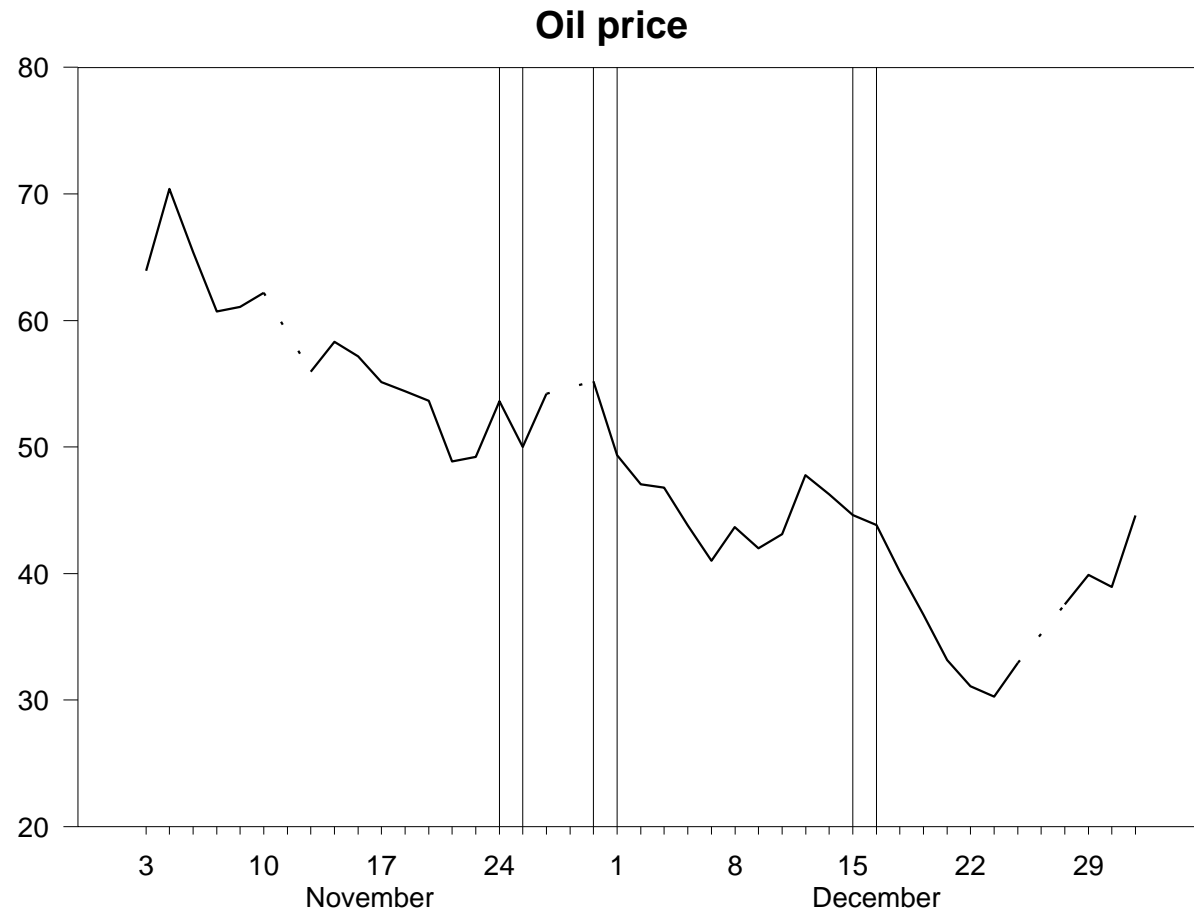
Oil price

fell 19% on 3 indicated dates

Dec 16, 2008: 10-year Treasury (TNX)

Dec 16, 2008: crude oil price (USO)

Dec 16, 2008: S&P500 (SPX)

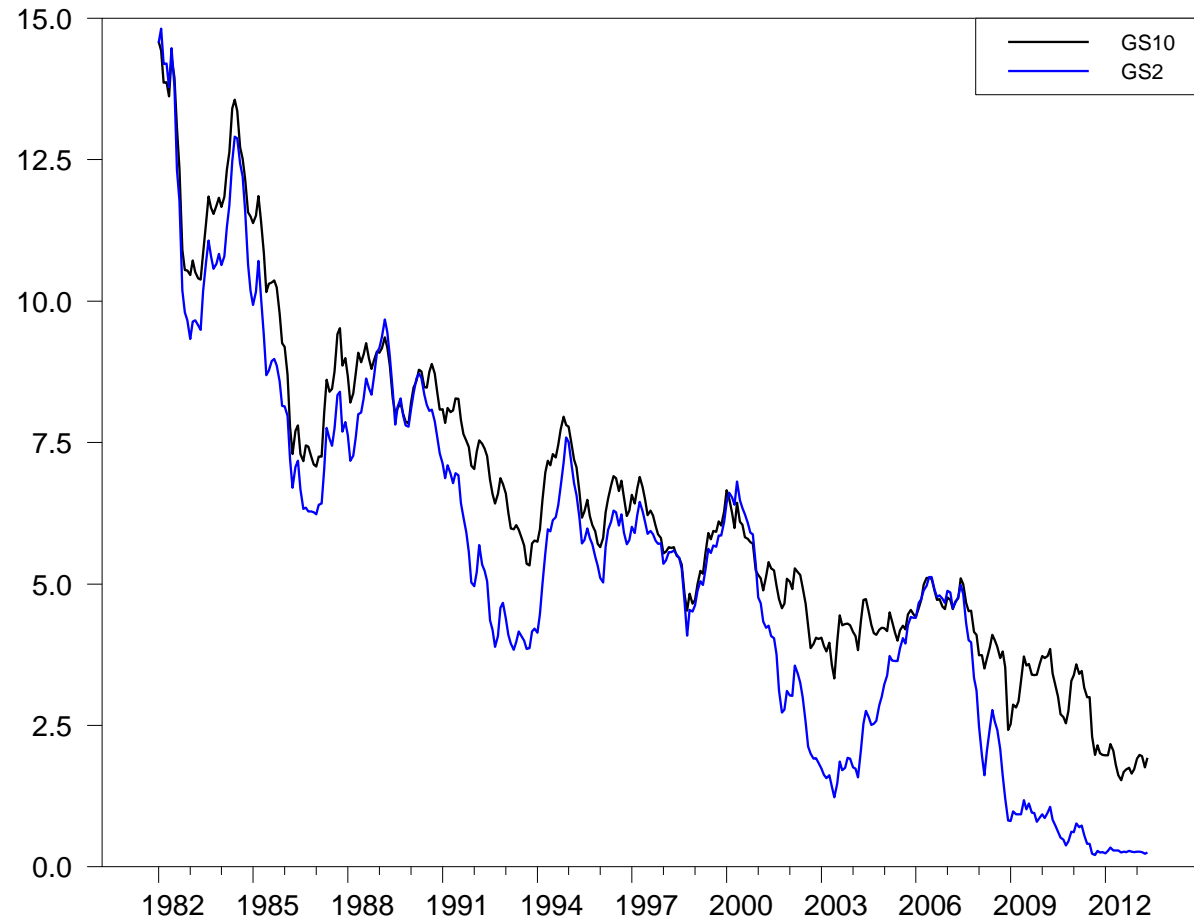Mar 18, 2009: 10-year Treasury (TNX)

Mar 18, 2009: crude oil price (USO)

Mar 18, 2009: S&P500 (SPX)

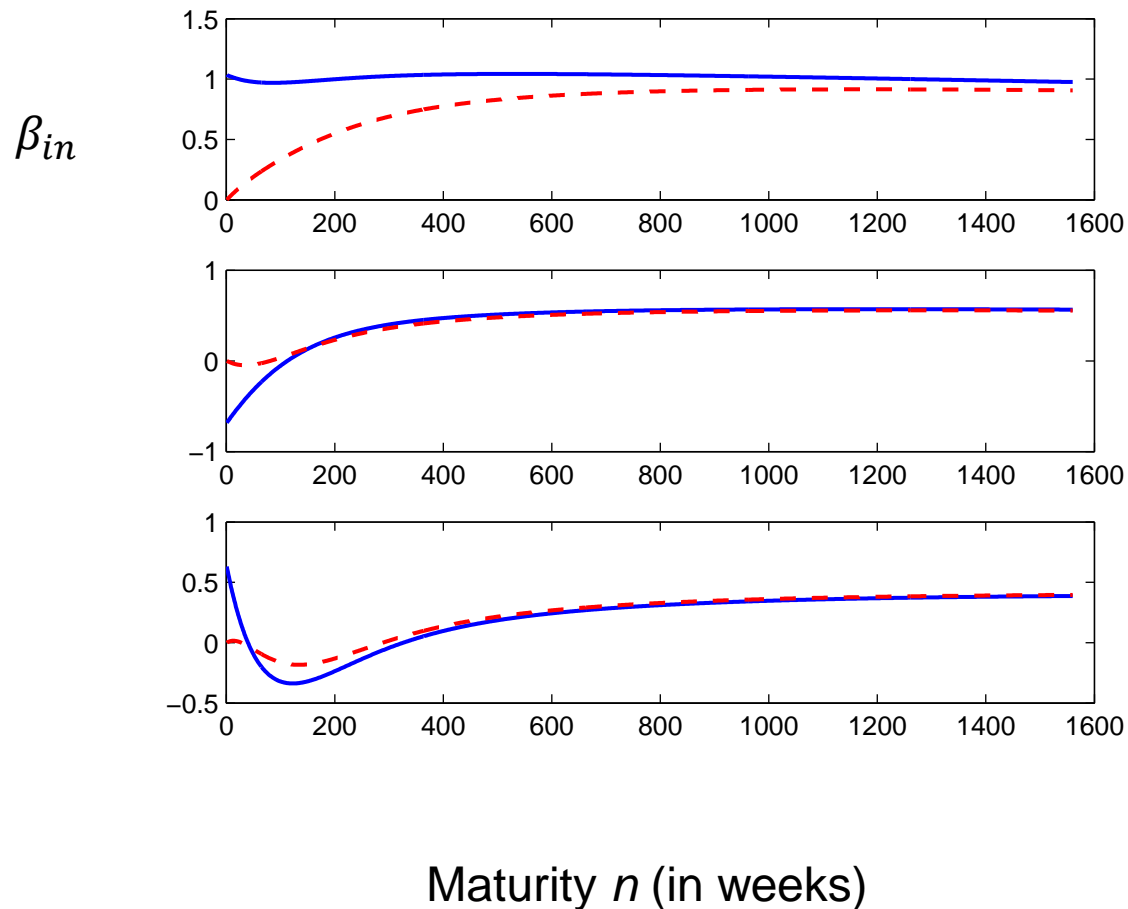# At the ZLB, variance of 2-year yield is much less than 10 year

$$\Delta y_{nt} = \sum_{i=1}^{M} \beta_{in} \varepsilon_{it}$$

$$Var(\Delta y_{nt}) = \sum_{i=1}^{M} \beta_{in}^2 \, \sigma_i^2$$
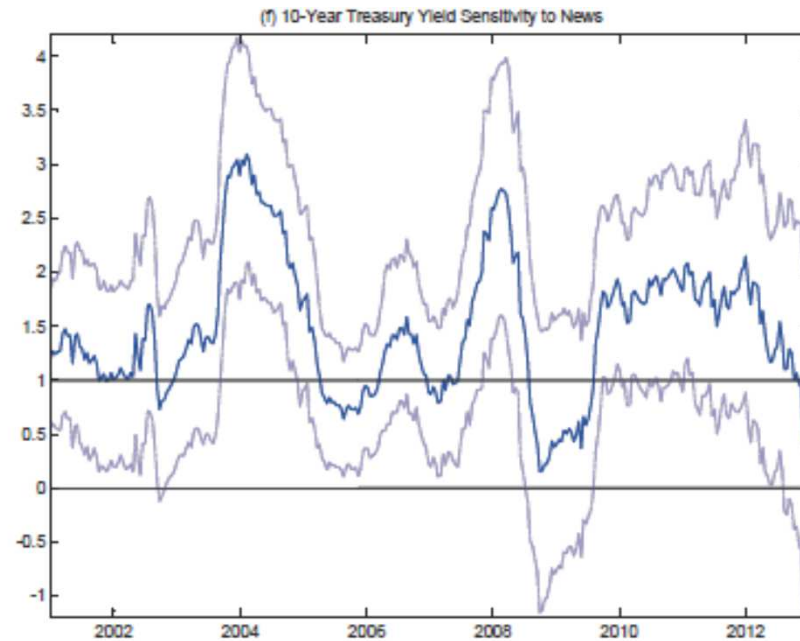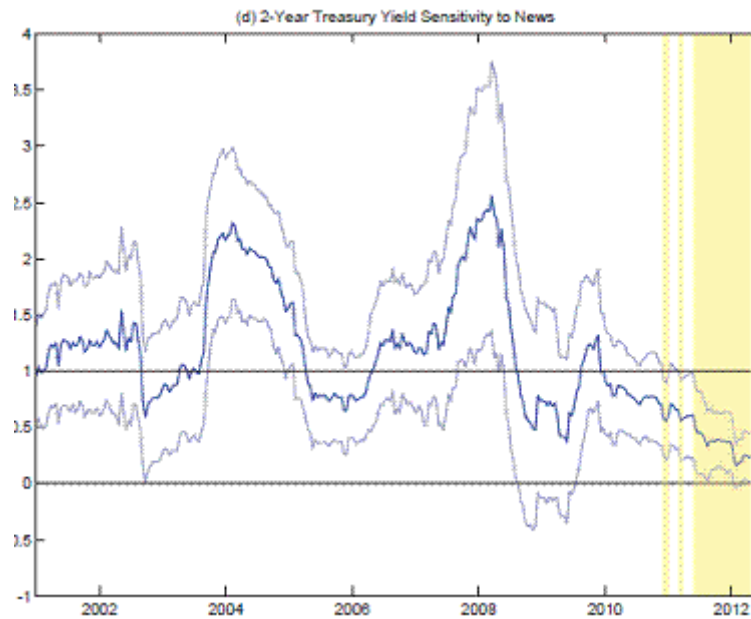
- Declining variance of 2-year securities means their response β_{i2} to any news item i is likely smaller.
- If normalize 2-year response at 1 before and after ZLB, response of 10-year yield to news is necessarily bigger

Hamilton and Wu (2012)

β_{in}

- i = level, slope, or curvature
- Blue = normal news impact, red = ZLB
- ZLB n =104: $\beta_{i2} = (1/3)\beta_{i,10}$
  $\rightarrow$ if β_{i2} is normalized to 1, then $\beta_{i,10}$ should be 3 times normal

Maturity n (in weeks)

Swanson & Williams (2013)

(d) 2-Year Treasury Yield Sensitivity to News

(f) 10-Year Treasury Yield Sensitivity to News

- β_{i2} for typical news item in 2012 was 1/3 its normal value
- $\beta_{i,10}$ was same as normal
- $\rightarrow$ if β_{i2} is normalized to 1, then $\beta_{i,10}$ should be 3 times normal

1. Change in 10-year yield is problematic instrument

Structural equation of interest:

$$\Delta y_{10,t} = \alpha_{10}^{(0)} + \beta_{10}^{(0)} \Delta y_{2,t} + \varepsilon_t^{(0)}$$

$\beta_{10}^{(0)}$ = true value of parameter

$\varepsilon_t^{(0)}$ = structural residual

1. Change in 10-year yield is problematic instrument

Problem: change in $y_{10,t}$ in 20-minute interval on day t is positively correlated with $\varepsilon_t^{(0)}$

Result: $\hat{\beta}_{10}^{IV}$ is biased upward

2. Measuring term premium is problematic

- Requires model to forecast short rate
- Regression estimates of persistence biased downward
- This means importance of term premia is overestimated
- Bauer and Rudebusch (2013)
- Bauer, Rudebusch and Wu (JBES, 2012)
- Bauer, Rudebusch and Wu (AER, forthcoming)

3. Change in fed funds futures on day t is not the unexpected change in target

- Futures contract based on average over month → underestimates news about target later in month

- Futures contract based on effective fed funds rate, not target → overestimates news about target (particularly at end of month)

Optimal weight on fed funds futures surprise as a function of day of month (Hamilton, 2008)

Plot of $\kappa_4(t)$ as a Function of t